ACGME Program Requirements for Graduate Medical Education in Neuroendovascular Intervention

Revision Information
ACGME-approved major revision: June 12, 2022; effective July 1, 2022
Updated to include revised Common Program Requirements, effective July 1, 2023

Definitions
For more information, see the ACGME Glossary of Terms.

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

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

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

Osteopathic Recognition
For programs with or applying for Osteopathic Recognition, the Osteopathic Recognition Requirements also apply (www.acgme.org/OsteopathicRecognition).

Contents

ACGME Program Requirements for Graduate Medical Education in Neuroendovascular Intervention

Common Program Requirements (Fellowship) are in BOLD

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

Background and Intent: These fellowship requirements reflect the fact that these learners have already completed the first phase of graduate medical education. Thus, the Common Program Requirements (Fellowship) are intended to explain the differences.

Introduction

Int.A. Definition of Graduate Medical Education

Fellowship is advanced graduate medical education beyond a core residency program for physicians who desire to enter more specialized practice. Fellowship-trained physicians serve the public by providing subspecialty care, which may also include core medical care, acting as a community resource for expertise in their field, creating and integrating new knowledge into practice, and educating future generations of physicians. Graduate medical education values the strength that a diverse group of physicians brings to medical care, and the importance of inclusive and psychologically safe learning environments.

Fellows who have completed residency are able to practice autonomously in their core specialty. The prior medical experience and expertise of fellows distinguish them from physicians entering residency. The fellow's care of patients within the subspecialty is undertaken with appropriate faculty supervision and conditional independence. Faculty members serve as role models of excellence, compassion, cultural sensitivity, professionalism, and scholarship. The fellow develops deep medical knowledge, patient care skills, and expertise applicable to their focused area of practice. Fellowship is an intensive program of subspecialty clinical and didactic education that focuses on the multidisciplinary care of patients. Fellowship education is often physically, emotionally, and intellectually demanding, and occurs in a variety of clinical learning environments committed to graduate medical education and the well-being of patients, residents, fellows, faculty members, students, and all members of the health care team.

In addition to clinical education, many fellowship programs advance fellows' skills as physician-scientists. While the ability to create new knowledge within medicine is not exclusive to fellowship-educated physicians, the fellowship experience expands a physician's abilities to pursue hypothesis-driven scientific inquiry that results in contributions to the medical literature and patient care. Beyond the clinical subspecialty

expertise achieved, fellows develop mentored relationships built on an infrastructure that promotes collaborative research.

Int.B. Definition of Subspecialty

Neuroendovascular intervention 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.

Int.C. Length of Educational Program

The educational program in neuroendovascular intervention must be 24 months in length. (Core)

I. Oversight

I.A. Sponsoring Institution

The Sponsoring Institution is the organization or entity that assumes the ultimate financial and academic responsibility for a program of graduate medical education consistent with the ACGME Institutional Requirements.

When the Sponsoring Institution is not a rotation site for the program, the most commonly utilized site of clinical activity for the program is the primary clinical site.

Background and Intent: Participating sites will reflect the health care needs of the community and the educational needs of the fellows. A wide variety of organizations may provide a robust educational experience and, thus, Sponsoring Institutions and participating sites may encompass inpatient and outpatient settings including, but not limited to a university, a medical school, a teaching hospital, a nursing home, a school of public health, a health department, a public health agency, an organized health care delivery system, a medical examiner's office, an educational consortium, a teaching health center, a physician group practice, federally qualified health center, or an educational foundation.

I.A.1. The program must be sponsored by one ACGME-accredited Sponsoring Institution. (Core)

I.B. Participating Sites

A participating site is an organization providing educational experiences or educational assignments/rotations for fellows.

I.B.1. The program, with approval of its Sponsoring Institution, must designate a primary clinical site. (Core)

I.B.1.a) A program in neuroendovascular intervention must be jointly administered by programs in diagnostic radiology, neurological

surgery, neuroradiology, and child neurology or neurology which are accredited by the ACGME; these programs must be present within the same primary clinical site. (Core)

I.B.1.a).(1) To request an exception, programs should submit a plan for how the intent of the requirement will be met. (Core)

I.B.2. There must be a program letter of agreement (PLA) between the program and each participating site that governs the relationship between the program and the participating site providing a required assignment. (Core)

I.B.2.a) The PLA must:

I.B.2.a).(1) be renewed at least every 10 years; and, (Core)

I.B.2.a).(2) be approved by the designated institutional official (DIO). (Core)

I.B.3. The program must monitor the clinical learning and working environment at all participating sites. (Core)

I.B.3.a) At each participating site there must be one faculty member, designated by the program director, who is accountable for fellow education for that site, in collaboration with the program director. (Core)

Background and Intent: While all fellowship programs must be sponsored by a single ACGME-accredited Sponsoring Institution, many programs will utilize other clinical settings to provide required or elective training experiences. At times it is appropriate to utilize community sites that are not owned by or affiliated with the Sponsoring Institution. Some of these sites may be remote for geographic, transportation, or communication issues. When utilizing such sites, the program must designate a faculty member responsible for ensuring the quality of the educational experience. In some circumstances, the person charged with this responsibility may not be physically present at the site, but remains responsible for fellow education occurring at the site.

Suggested elements to be considered in PLAs will be found in the Guide to the Common Program Requirements. These include:

- **Identifying the faculty members who will assume educational and supervisory responsibility for fellows**
- **Specifying the responsibilities for teaching, supervision, and formal evaluation of fellows**
- **Specifying the duration and content of the educational experience**
- **Stating the policies and procedures that will govern fellow education during the assignment**

I.B.4. 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 ACGME's Accreditation Data System (ADS). (Core)

I.C. Workforce Recruitment and Retention

The program, in partnership with its Sponsoring Institution, must engage in practices that focus on mission-driven, ongoing, systematic recruitment and retention of a diverse and inclusive workforce of residents (if present), fellows, faculty members, senior administrative GME staff members, and other relevant members of its academic community. (Core)

Background and Intent: It is expected that the Sponsoring Institution has, and programs implement, policies and procedures related to recruitment and retention of individuals underrepresented in medicine and medical leadership in accordance with the Sponsoring Institution's mission and aims.

I.D. Resources

I.D.1. The program, in partnership with its Sponsoring Institution, must ensure the availability of adequate resources for fellow education. (Core)

I.D.1.a) Equipment and Facilities

I.D.1.a).(1) Modern imaging/procedure rooms and equipment must be available and permit the performance of all neuroendovascular intervention procedures. (Core)

I.D.1.a).(2) Rooms in which neuroendovascular intervention procedures are performed must be equipped with physiological monitoring and resuscitative equipment. (Core)

I.D.1.a).(2).(a) The following equipment must be modern and available to the program:

I.D.1.a).(2).(a).(i) magnetic resonance imaging (MRI) scanner equipped with high-speed gradients, and perfusion capability; (Core)

I.D.1.a).(2).(a).(ii) computed tomography (CT) scanner (multi-detector) capable of CT angiography and CT perfusion; (Core)

I.D.1.a).(2).(a).(iii) biplane digital subtraction angiography with roadmap and three-dimensional imaging capability; (Core)

I.D.1.a).(2).(a).(iv) ultrasound; and, (Core)

I.D.1.a).(2).(a).(v) radiographic-fluoroscopic room(s). (Core)

I.D.1.a).(3) Facilities for storing catheters, guidewires, contrast materials, embolic agents, and other supplies must be adjacent to or within procedure rooms. (Core)

I.D.1.a).(4) There must be adequate space and facilities for image display and interpretation, and for consultation with other clinicians. (Core)

I.D.1.a).(5) The sites where neuroendovascular intervention training is conducted must include inpatient, outpatient, emergency, and intensive care facilities for direct fellow involvement in providing comprehensive neuroendovascular intervention care. (Core)

I.D.1.a).(6) The Sponsoring Institution should provide laboratory facilities to support research projects pertinent to endovascular therapies. (Detail)

I.D.1.b) The program must ensure an adequate patient population with a diversity of illnesses from which fellows may obtain a broad experience in neuroendovascular intervention. (Core)

I.D.1.b).(1) The volume of the patient population must be adequate to provide a minimum of 250 therapeutic neuroendovascular intervention procedures per fellow. (Core)

I.D.1.c) The case material should encompass a range of diseases, including: (Core)

I.D.1.c).(1) aneurysms; (Core)

I.D.1.c).(2) arteriovenous malformation; (Core)

I.D.1.c).(3) atherosclerotic disease of the cervical vessels; (Core)

I.D.1.c).(4) occlusive vascular disease and acute infarction; (Core)

I.D.1.c).(5) intracranial neoplasms; (Core)

I.D.1.c).(6) vascular anomalies of the head and neck; (Core)

I.D.1.c).(7) neoplasms of the head and neck; (Core)

I.D.1.c).(8) vascular anomalies of the spine; (Core)

I.D.1.c).(9) neoplasms of the spine; and, (Core)

I.D.1.c).(10) traumatic vascular lesions of the central nervous system (CNS), head, neck, and spine. (Core)

I.D.2. **The program, in partnership with its Sponsoring Institution, must ensure healthy and safe learning and working environments that promote fellow well-being and provide for:**

I.D.2.a) **access to food while on duty; (Core)**

I.D.2.b) **safe, quiet, clean, and private sleep/rest facilities available and accessible for fellows with proximity appropriate for safe patient care; (Core)**

Background and Intent: Care of patients within a hospital or health system occurs continually through the day and night. Such care requires that fellows function at their peak abilities, which requires the work environment to provide them with the ability to meet their basic needs within proximity of their clinical responsibilities. Access to food and rest are examples of these basic needs, which must be met while fellows are working. Fellows should have access to refrigeration where food may be stored. Food should be available when fellows are required to be in the hospital overnight. Rest facilities are necessary, even when overnight call is not required, to accommodate the fatigued fellow.

I.D.2.c) **clean and private facilities for lactation that have refrigeration capabilities, with proximity appropriate for safe patient care; (Core)**

Background and Intent: Sites must provide private and clean locations where fellows may lactate and store the milk within a refrigerator. These locations should be in close proximity to clinical responsibilities. It would be helpful to have additional support within these locations that may assist the fellow with the continued care of patients, such as a computer and a phone. While space is important, the time required for lactation is also critical for the well-being of the fellow and the fellow's family, as outlined in VI.C.1.c).(1).

I.D.2.d) **security and safety measures appropriate to the participating site; and, (Core)**

I.D.2.e) **accommodations for fellows with disabilities consistent with the Sponsoring Institution's policy. (Core)**

I.D.3. **Fellows must have ready access to subspecialty-specific and other appropriate reference material in print or electronic format. This must include access to electronic medical literature databases with full text capabilities. (Core)**

I.E. **Other Learners and Health Care Personnel**

The presence of other learners and other health care personnel, including but not limited to residents from other programs, subspecialty fellows, and advanced practice providers, must not negatively impact the appointed fellows' education. (Core)

Subspecialty-Specific Background and Intent: It is desirable that fellows participate in the clinical teaching of child neurology, neurological surgery, and neurology residents, radiology and vascular neurology fellows, and medical students.

I.E.1.a) The program in neuroendovascular intervention must not have an adverse impact on the educational experience of child neurology, diagnostic radiology, interventional radiology, neurocritical care, neurological surgery, neurology, neuroradiology, or vascular neurology residents and fellows in the same institution. (Core)

Background and Intent: The clinical learning environment has become increasingly complex and often includes care providers, students, and post-graduate residents and fellows from multiple disciplines. The presence of these practitioners and their learners enriches the learning environment. Programs have a responsibility to monitor the learning environment to ensure that fellows' education is not compromised by the presence of other providers and learners, and that fellows' education does not compromise core residents' education.

II. Personnel

II.A. Program Director

II.A.1. There must be one faculty member appointed as program director with authority and accountability for the overall program, including compliance with all applicable program requirements. (Core)

II.A.1.a) The Sponsoring Institution's Graduate Medical Education Committee (GMEC) must approve a change in program director and must verify the program director's licensure and clinical appointment. (Core)

II.A.1.a).(1) Final approval of the program director resides with the Review Committee. (Core)

Background and Intent: While the ACGME recognizes the value of input from numerous individuals in the management of a fellowship, a single individual must be designated as program director and have overall responsibility for the program. The program director's nomination is reviewed and approved by the GMEC.

II.A.2. The program director and, as applicable, the program's leadership team, must be provided with support adequate for administration of the program based upon its size and configuration. (Core)

II.A.2.a) At a minimum, the program director must be provided with the dedicated time and support specified below for administration of the program: (Core)

Number of Approved Fellow Positions	Minimum Support Required (FTE)
1-6	0.1
7-8	0.2
9 or more	0.3

Background and Intent: To achieve successful graduate medical education, individuals serving as education and administrative leaders of fellowship programs, as well as those significantly engaged in the education, supervision, evaluation, and mentoring of fellows, must have sufficient dedicated professional time to perform the vital activities required to sustain an accredited program.

The ultimate outcome of graduate medical education is excellence in fellow education and patient care.

The program director and, as applicable, the program leadership team, devote a portion of their professional effort to the oversight and management of the fellowship program, as defined in II.A.4.-II.A.4.a).(12). Both provision of support for the time required for the leadership effort and flexibility regarding how this support is provided are important. Programs, in partnership with their Sponsoring Institutions, may provide support for this time in a variety of ways. Examples of support may include, but are not limited to, salary support, supplemental compensation, educational value units, or relief of time from other professional duties.

Program directors and, as applicable, members of the program leadership team, who are new to the role may need to devote additional time to program oversight and management initially as they learn and become proficient in administering the program. It is suggested that during this initial period the support described above be increased as needed.

In addition, it is important to remember that the dedicated time and support requirement for ACGME activities is a *minimum*, recognizing that, depending on the unique needs of the program, additional support may be warranted. The need to ensure adequate resources, including adequate support and dedicated time for the program director, is also addressed in Institutional Requirement II.B.1. The amount of support and dedicated time needed for individual programs will vary based on a number of factors and may exceed the minimum specified in the applicable specialty/subspecialty-specific Program Requirements. It is expected that the Sponsoring Institution, in partnership with its accredited programs, will ensure support for program directors to fulfill their program responsibilities effectively.

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

II.A.3.a) must include subspecialty expertise and qualifications acceptable to the Review Committee; and, (Core)

II.A.3.a).(1) This must include special expertise in neuroendovascular interventions. (Core)

II.A.3.b) **have current certification in the specialty by the American Board of** Neurological Surgery, Psychiatry and Neurology, Radiology, **or the American Osteopathic Board of** Neurological Surgery, Neurology and Psychiatry, or Radiology, **or possess qualifications judged acceptable to the Review Committee;** **(Core)**

[Note that while the Common Program Requirements deem certification by a member board of the American Board of Medical Specialties (ABMS) or a certifying board of the American Osteopathic Association (AOA) acceptable, there is no ABMS or AOA board that offers certification in this subspecialty]

II.A.3.c) must include appointment to the faculty in the departments of neurological surgery, radiology, and child neurology, or neurology; and, (Core)

II.A.3.d) must devote at least 50 percent of their practice to neuroendovascular intervention. (Core)

II.A.4. Program Director Responsibilities

The program director must have responsibility, authority, and accountability for: administration and operations; teaching and scholarly activity; fellow recruitment and selection, evaluation, and promotion of fellows, and disciplinary action; supervision of fellows; and fellow education in the context of patient care. **(Core)**

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

II.A.4.a).(1) be a role model of professionalism; **(Core)**

Background and Intent: The program director, as the leader of the program, must serve as a role model to fellows in addition to fulfilling the technical aspects of the role. As fellows are expected to demonstrate compassion, integrity, and respect for others, they must be able to look to the program director as an exemplar. It is of utmost importance, therefore, that the program director model outstanding professionalism, high quality patient care, educational excellence, and a scholarly approach to work. The program director creates an environment where respectful discussion is welcome, with the goal of continued improvement of the educational experience.

II.A.4.a).(2) design and conduct the program in a fashion consistent with the needs of the community, the mission(s) of the Sponsoring Institution, and the mission(s) of the program; **(Core)**

Background and Intent: The mission of institutions participating in graduate medical education is to improve the health of the public. Each community has health needs that vary based upon location and demographics. Programs must understand the structural and social determinants of health of the populations they serve and

incorporate them in the design and implementation of the program curriculum, with the ultimate goal of addressing these needs and eliminating health disparities.

II.A.4.a).(3) **administer and maintain a learning environment conducive to educating the fellows in each of the ACGME Competency domains; (Core)**

Background and Intent: The program director may establish a leadership team to assist in the accomplishment of program goals. Fellowship programs can be highly complex. In a complex organization the leader typically has the ability to delegate authority to others, yet remains accountable. The leadership team may include physician and non-physician personnel with varying levels of education, training, and experience.

II.A.4.a).(4) **have the authority to approve or remove physicians and non-physicians as faculty members at all participating sites, including the designation of core faculty members, and must develop and oversee a process to evaluate candidates prior to approval; (Core)**

Background and Intent: The provision of optimal and safe patient care requires a team approach. The education of fellows by non-physician educators may enable the fellows to better manage patient care and provides valuable advancement of the fellows' knowledge. Furthermore, other individuals contribute to the education of fellows in the basic science of the subspecialty or in research methodology. If the program director determines that the contribution of a non-physician individual is significant to the education of the fellow, the program director may designate the individual as a program faculty member or a program core faculty member.

II.A.4.a).(5) **have the authority to remove fellows from supervising interactions and/or learning environments that do not meet the standards of the program; (Core)**

Background and Intent: The program director has the responsibility to ensure that all who educate fellows effectively role model the Core Competencies. Working with a fellow is a privilege that is earned through effective teaching and professional role modeling. This privilege may be removed by the program director when the standards of the clinical learning environment are not met.

There may be faculty in a department who are not part of the educational program, and the program director controls who is teaching the residents.

II.A.4.a).(6) **submit accurate and complete information required and requested by the DIO, GMEC, and ACGME; (Core)**

Background and Intent: This includes providing information in the form and format requested by the ACGME and obtaining requisite sign-off by the DIO.

II.A.4.a).(7) **provide a learning and working environment in which fellows have the opportunity to raise concerns, report**

mistreatment, and provide feedback in a confidential manner as appropriate, without fear of intimidation or retaliation; (Core)

II.A.4.a).(8) **ensure the program's compliance with the Sponsoring Institution's policies and procedures related to grievances and due process, including when action is taken to suspend or dismiss, not to promote, or renew the appointment of a fellow; (Core)**

Background and Intent: A program does not operate independently of its Sponsoring Institution. It is expected that the program director will be aware of the Sponsoring Institution's policies and procedures, and will ensure they are followed by the program's leadership, faculty members, support personnel, and fellows.

II.A.4.a).(9) **ensure the program's compliance with the Sponsoring Institution's policies and procedures on employment and non-discrimination; (Core)**

II.A.4.a).(9).(a) **Fellows must not be required to sign a non-competition guarantee or restrictive covenant. (Core)**

II.A.4.a).(10) **document verification of education for all fellows within 30 days of completion of or departure from the program; (Core)**

II.A.4.a).(11) **provide verification of an individual fellow's education upon the fellow's request, within 30 days; and, (Core)**

Background and Intent: Primary verification of graduate medical education is important to credentialing of physicians for further training and practice. Such verification must be accurate and timely. Sponsoring Institution and program policies for record retention are important to facilitate timely documentation of fellows who have previously completed the program. Fellows who leave the program prior to completion also require timely documentation of their summative evaluation.

II.A.4.a).(12) **provide applicants who are offered an interview with information related to their eligibility for the relevant specialty board examination(s). (Core)**

II.B. Faculty

Faculty members are a foundational element of graduate medical education – faculty members teach fellows how to care for patients. Faculty members provide an important bridge allowing fellows to grow and become practice ready, ensuring that patients receive the highest quality of care. They are role models for future generations of physicians by demonstrating compassion, commitment to excellence in teaching and patient care, professionalism, and a dedication to lifelong learning. Faculty members experience the pride and joy of fostering the growth and development of

future colleagues. The care they provide is enhanced by the opportunity to teach and model exemplary behavior. By employing a scholarly approach to patient care, faculty members, through the graduate medical education system, improve the health of the individual and the population.

Faculty members ensure that patients receive the level of care expected from a specialist in the field. They recognize and respond to the needs of the patients, fellows, community, and institution. Faculty members provide appropriate levels of supervision to promote patient safety. Faculty members create an effective learning environment by acting in a professional manner and attending to the well-being of the fellows and themselves.

Background and Intent: "Faculty" refers to the entire teaching force responsible for educating fellows. The term "faculty," including "core faculty," does not imply or require an academic appointment.

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

II.B.1.a) There must be at least one faculty member with expertise in open cerebrovascular surgery available to the program. (Core)

II.B.1.a).(1) This faculty member should have a teaching appointment in the departments of child neurology, neurological surgery, neurology, or radiology. (Detail)

II.B.1.b) There must be at least two faculty members with expertise in neuroendovascular intervention or neuroendovascular surgery for each fellow in the program. (Core)

II.B.2. Faculty members must:

II.B.2.a) be role models of professionalism; (Core)

II.B.2.b) demonstrate commitment to the delivery of safe, equitable, high-quality, cost-effective, patient-centered care; (Core)

Background and Intent: Patients have the right to expect quality, cost-effective care with patient safety at its core. The foundation for meeting this expectation is formed during residency and fellowship. Faculty members model these goals and continually strive for improvement in care and cost, embracing a commitment to the patient and the community they serve.

II.B.2.c) demonstrate a strong interest in the education of fellows, including devoting sufficient time to the educational program to fulfill their supervisory and teaching responsibilities; (Core)

II.B.2.d) administer and maintain an educational environment conducive to educating fellows; (Core)

II.B.2.e) **regularly participate in organized clinical discussions, rounds, journal clubs, and conferences; (Core)**

II.B.2.f) **pursue faculty development designed to enhance their skills at least annually; (Core)**

II.B.2.g) encourage and support fellows in scholarly activities; and, (Core)

II.B.2.h) provide didactic teaching and direct supervision of fellows' performance in clinical patient management and in the procedural, interpretive, and consultative aspects of neuroendovascular intervention. (Core)

Background and Intent: Faculty development is intended to describe structured programming developed for the purpose of enhancing transference of knowledge, skill, and behavior from the educator to the learner. Faculty development may occur in a variety of configurations (lecture, workshop, etc.) using internal and/or external resources. Programming is typically needs-based (individual or group) and may be specific to the institution or the program. Faculty development programming is to be reported for the fellowship program faculty in the aggregate.

II.B.3. Faculty Qualifications

II.B.3.a) **Faculty members must have appropriate qualifications in their field and hold appropriate institutional appointments. (Core)**

II.B.3.b) **Subspecialty physician faculty members must:**

II.B.3.b).(1) **have current certification in the specialty by the American Board of** Neurological Surgery, Psychiatry and Neurology, Radiology, **or the American Osteopathic Board of** Neurological Surgery, Neurology and Psychiatry, Radiology**, or possess qualifications judged acceptable to the Review Committee; (Core)**

[Note that while the Common Program Requirements deem certification by a member board of the American Board of Medical Specialties (ABMS) or a certifying board of the American Osteopathic Association (AOA) acceptable, there is no ABMS or AOA board that offers certification in this subspecialty]

II.B.3.b).(2) devote at least 50 percent of their practice to neuroendovascular interventions; (Core)

II.B.3.b).(3) be appointed in good standing to the faculty of an institution participating in the program; and, (Core)

II.B.3.b).(4) hold primary and/or joint appointments in the departments of child neurology or neurology, neurological surgery, and radiology. (Detail)

II.B.3.c) **Any other specialty physician faculty members must have current certification in their specialty by the appropriate American Board of Medical Specialties (ABMS) member board or American Osteopathic Association (AOA) certifying board, or possess qualifications judged acceptable to the Review Committee. (Core)**

II.B.4. Core Faculty

Core faculty members must have a significant role in the education and supervision of fellows and must devote a significant portion of their entire effort to fellow education and/or administration, and must, as a component of their activities, teach, evaluate, and provide formative feedback to fellows. (Core)

Background and Intent: Core faculty members are critical to the success of fellow education. They support the program leadership in developing, implementing, and assessing curriculum, mentoring fellows, and assessing fellows' progress toward achievement of competence in and the autonomous practice of the specialty. Core faculty members should be selected for their broad knowledge of and involvement in the program, permitting them to effectively evaluate the program. Core faculty members may also be selected for their specific expertise and unique contribution to the program. Core faculty members are engaged in a broad range of activities, which may vary across programs and specialties. Core faculty members provide clinical teaching and supervision of fellows, and also participate in non-clinical activities related to fellow education and program administration. Examples of these non-clinical activities include, but are not limited to, interviewing and selecting fellow applicants, providing didactic instruction, mentoring fellows, simulation exercises, completing the annual ACGME Faculty Survey, and participating on the program's Clinical Competency Committee, Program Evaluation Committee, and other GME committees.

II.B.4.a) **Faculty members must complete the annual ACGME Faculty Survey. (Core)**

II.B.4.b) There must be at least two core faculty members, including the program director, with expertise in neuroendovascular intervention or neuroendovascular surgery. (Core)

II.C. Program Coordinator

II.C.1. **There must be a program coordinator. (Core)**

II.C.2. **The program coordinator must be provided with dedicated time and support adequate for administration of the program based upon its size and configuration. (Core)**

II.C.2.a) At a minimum, the program coordinator must be provided with the dedicated time and support specified below for administration of the program:

Number of Approved Fellow Positions	Minimum Support Required (FTE)
1-3	0.3
4-7	0.4
8 or more	0.5

Background and Intent: The requirement does not address the source of funding required to provide the specified salary support.

Each program requires a lead administrative person, frequently referred to as a program coordinator, administrator, or as otherwise titled by the institution. This person will frequently manage the day-to-day operations of the program and serve as an important liaison and facilitator between the learners, faculty and other staff members, and the ACGME. Individuals serving in this role are recognized as program coordinators by the ACGME.

The program coordinator is a key member of the leadership team and is critical to the success of the program. As such, the program coordinator must possess skills in leadership and personnel management appropriate to the complexity of the program. Program coordinators are expected to develop in-depth knowledge of the ACGME and Program Requirements, including policies and procedures. Program coordinators assist the program director in meeting accreditation requirements, educational programming, and support of fellows.

Programs, in partnership with their Sponsoring Institutions, should encourage the professional development of their program coordinators and avail them of opportunities for both professional and personal growth. Programs with fewer fellows may not require a full-time coordinator; one coordinator may support more than one program.

The minimum required dedicated time and support specified in II.C.2.a) is inclusive of activities directly related to administration of the accredited program. It is understood that coordinators often have additional responsibilities, beyond those directly related to program administration, including, but not limited to, departmental administrative responsibilities, medical school clerkships, planning lectures that are not solely intended for the accredited program, and mandatory reporting for entities other than the ACGME. Assignment of these other responsibilities will necessitate consideration of allocation of additional support so as not to preclude the coordinator from devoting the time specified above solely to administrative activities that support the accredited program.

In addition, it is important to remember that the dedicated time and support requirement for ACGME activities is a minimum, recognizing that, depending on the unique needs of the program, additional support may be warranted. The need to ensure adequate resources, including adequate support and dedicated time for the program coordinator, is also addressed in Institutional Requirement II.B.4. The amount

of support and dedicated time needed for individual programs will vary based on a number of factors and may exceed the minimum specified in the applicable specialty/subspecialty-specific Program Requirements. It is expected that the Sponsoring Institution, in partnership with its accredited programs, will ensure support for program coordinators to fulfill their program responsibilities effectively.

II.D. Other Program Personnel

The program, in partnership with its Sponsoring Institution, must jointly ensure the availability of necessary personnel for the effective administration of the program. (Core)

Background and Intent: Multiple personnel may be required to effectively administer a program. These may include staff members with clerical skills, project managers, education experts, and staff members to maintain electronic communication for the program. These personnel may support more than one program in more than one discipline.

II.D.1. There should be nurses and technicians skilled in neuroendovascular intervention, radiological equipment, critical care instrumentation, respiratory function, and laboratory medicine available to the program. (Core)

III. Fellow Appointments

III.A. Eligibility Criteria

III.A.1. Eligibility Requirements – Fellowship Programs

All required clinical education for entry into ACGME-accredited fellowship programs must be completed in an ACGME-accredited residency program or an AOA-approved residency program. (Core)

III.A.1.a) Fellowship programs must receive verification of each entering fellow's level of competence in the required field using ACGME Milestones evaluations from the core residency program. (Core)

Background and Intent: A reporting feature is available for fellowship programs within ADS to provide fellowship program directors access to the final Milestones report for an active fellow's most recently completed residency program. These reports are available to fellowship program directors in mid-July, and use of this system to retrieve the reports is encouraged. There are a few scenarios in which these reports may not be available, such as if a fellow completed residency in a program not accredited by the ACGME, if a fellow completed residency prior to Milestones implementation, or if a fellow's previous experience could not be matched when entered into the program. For those without Milestones reports, programs must contact the specialty program director from the fellow's most recent residency program to obtain the required information. This new reporting feature can be found in ADS by logging in and

navigating to the program's "Reports" tab, and then selecting the "Residency Milestone Retrieval" option.

Prerequisite Post-Graduate Education

III.A.1.a).(1) Radiology Pathway 1: Fellows entering from diagnostic radiology must have

III.A.1.a).(1).(a) completed an ACGME-accredited or AOA-approved residency in diagnostic radiology; and, (Core)

III.A.1.a).(1).(b) completed an ACGME-accredited or AOA-approved fellowship in neuroradiology. (Core)

III.A.1.a).(2) Radiology Pathway 2: Fellows entering from diagnostic radiology programs are eligible to enter at the second year of the neuroendovascular intervention program, and:

III.A.1.a).(2).(a) must have completed an ACGME-accredited or AOA-approved residency in diagnostic radiology; and, (Core)

III.A.1.a).(2).(b) must have completed an ACGME-accredited or AOA-approved fellowship in neuroradiology; and, (Core)

III.A.1.a).(2).(c) during the PGY-5 of diagnostic radiology residency and the PGY-6 of neuroradiology fellowship, must complete six months of clinical rotations and training in neurological surgery, vascular neurology, or neurointensive care with emphasis on becoming competent 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; and, (Core)

III.A.1.a).(2).(d) during the PGY-5 of diagnostic radiology residency and the PGY-6 of neuroradiology fellowship, must complete at least 200 neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training). (Core)

III.A.1.a).(3) Radiology Pathway 3: Fellows entering from interventional radiology must have:

III.A.1.a).(3).(a) completed an ACGME-accredited or AOA-approved residency in interventional radiology; and, (Core)

III.A.1.a).(3).(b) completed an ACGME-accredited or AOA-approved fellowship in neuroradiology. (Core)

III.A.1.a).(4) Radiology Pathway 4: Fellows entering from interventional radiology are eligible to enter at the second year of the neuroendovascular intervention program, and:

III.A.1.a).(4).(a) must have completed an ACGME-accredited or AOA-approved residency in interventional radiology; and, (Core)

III.A.1.a).(4).(b) must have completed an ACGME-accredited or AOA-approved fellowship in neuroradiology; and, (Core)

III.A.1.a).(4).(c) during the PGY-5 and -6 of interventional radiology residency and the PGY-7 of neuroradiology fellowship, must complete six months of clinical rotations and training in neurological surgery, vascular neurology, or neurointensive care with emphasis on becoming competent 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; and, (Core)

III.A.1.a).(4).(d) during the PGY-5 and -6 of interventional radiology residency and the PGY-7 of neuroradiology fellowship, must complete at least 200 neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training). (Core)

III.A.1.a).(5) Fellows entering from neurological surgery are eligible to enter at the second year of the neuroendovascular intervention fellowship, and must have:

III.A.1.a).(5).(a) completed an ACGME-accredited or AOA-approved residency in neurological surgery, and, (Core)

III.A.1.a).(5).(b) completed a preparatory year of neuroradiology training that provides education and clinical

experience may occur during the neurological surgery residency, and should include: (Core)

III.A.1.a).(5).(b).(i) 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; (Core)

III.A.1.a).(5).(b).(ii) performing and interpreting a minimum of 200 diagnostic neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training; (Core)

III.A.1.a).(5).(b).(iii) the use of needles, catheters, guidewires, and angiographic devices and materials; (Core)

III.A.1.a).(5).(b).(iv) recognition and management of complication of angiographic procedures; and, (Core)

III.A.1.a).(5).(b).(v) understanding the fundamentals of non-invasive neurovascular imaging studies pertinent to the practice of neuroendovascular intervention, including CT/CTA, MR/MRA, and sonography of neurovascular diseases. (Core)

Subspecialty-Specific Background and Intent: Fellows entering from neurological surgery who have not met all of the above criteria for advanced placement may be subject to additional fellowship time up to the full 24-month curriculum at the discretion of the neuroendovascular intervention program director.

III.A.1.a).(6) Fellows entering from neurology are eligible to enter at the second year of the neuroendovascular intervention fellowship, and must have:

III.A.1.a).(6).(a) completed an ACGME-accredited or AOA-approved residency in child neurology or neurology; and, (Core)

III.A.1.a).(6).(b) completed an ACGME-accredited or AOA-approved vascular neurology or neurocritical care; and, (Core)

III.A.1.a).(6).(c) completed a preparatory year of neuroradiology training that provides education and clinical experience that includes: (Core)

III.A.1.a).(6).(c).(i) 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; (Core)

III.A.1.a).(6).(c).(ii) performing and interpreting a minimum of 200 diagnostic neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training); (Core)

III.A.1.a).(6).(c).(iii) instruction in the use of needles, catheters, guidewires, and angiographic devices and materials; (Core)

III.A.1.a).(6).(c).(iv) recognition and management of complication of angiographic procedures; and, (Core)

III.A.1.a).(6).(c).(v) understanding the fundamentals of non-invasive neurovascular imaging studies pertinent to the practice of neuroendovascular intervention, including CT/CTA, MR/MRA and sonography of neurovascular diseases. (Core)

Subspecialty-Specific Background and Intent: Fellows entering from neurology who have not met all of the above criteria for advanced placement may be subject to additional fellowship time up to the full 24-month curriculum at the discretion of the neuroendovascular intervention program director.

III.B. Fellow Complement

The program director must not appoint more fellows than approved by the Review Committee. (Core)

Background and Intent: Programs are required to request approval of all complement changes, whether temporary or permanent, by the Review Committee through ADS. Permanent increases require prior approval from the Review Committee and temporary increases may also require approval. Specialty-specific instructions for requesting a complement increase are found in the "Documents and Resources" page of the applicable specialty section of the ACGME website.

III.C. Fellow Transfers

The program must obtain verification of previous educational experiences and a summative competency-based performance evaluation prior to acceptance of a transferring fellow, and Milestones evaluations upon matriculation. (Core)

IV. Educational Program

The ACGME accreditation system is designed to encourage excellence and innovation in graduate medical education regardless of the organizational affiliation, size, or location of the program.

The educational program must support the development of knowledgeable, skillful physicians who provide compassionate care.

It is recognized that programs may place different emphasis on research, leadership, public health, etc. It is expected that the program aims will reflect the nuanced program-specific goals for it and its graduates; for example, it is expected that a program aiming to prepare physician-scientists will have a different curriculum from one focusing on community health.

IV.A. Educational Components

The curriculum must contain the following educational components:

IV.A.1. **a set of program aims consistent with the Sponsoring Institution's mission, the needs of the community it serves, and the desired distinctive capabilities of its graduates, which must be made available to program applicants, fellows, and faculty members;** (Core)

IV.A.2. **competency-based goals and objectives for each educational experience designed to promote progress on a trajectory to autonomous practice in their subspecialty. These must be distributed, reviewed, and available to fellows and faculty members;** (Core)

IV.A.3. **delineation of fellow responsibilities for patient care, progressive responsibility for patient management, and graded supervision in their subspecialty;** (Core)

Background and Intent: These responsibilities may generally be described by PGY level and specifically by Milestones progress as determined by the Clinical Competency Committee. This approach encourages the transition to competency-

based education. An advanced learner may be granted more responsibility independent of PGY level and a learner needing more time to accomplish a certain task may do so in a focused rather than global manner.

IV.A.4. **structured educational activities beyond direct patient care; and,** (Core)

IV.A.4.a) **Fellows must be provided with protected time to participate in core didactic activities.** (Core)

Background and Intent: Patient care-related educational activities, such as morbidity and mortality conferences, tumor boards, surgical planning conferences, case discussions, etc., allow fellows to gain medical knowledge directly applicable to the patients they serve. Programs should define those educational activities in which fellows are expected to participate and for which time is protected. Further specification can be found in IV.C.

IV.A.5. **formal educational activities that promote patient safety-related goals, tools, and techniques.** (Core)

IV.B. **ACGME Competencies**

Background and Intent: The Competencies provide a conceptual framework describing the required domains for a trusted physician to enter autonomous practice. These Competencies are core to the practice of all physicians, although the specifics are further defined by each subspecialty. The developmental trajectories in each of the Competencies are articulated through the Milestones for each subspecialty. The focus in fellowship is on subspecialty-specific patient care and medical knowledge, as well as refining the other competencies acquired in residency.

IV.B.1. **The program must integrate the following ACGME Competencies into the curriculum:**

IV.B.1.a) **Professionalism**

Fellows must demonstrate a commitment to professionalism and an adherence to ethical principles. (Core)

IV.B.1.b) **Patient Care and Procedural Skills**

Background and Intent: Quality patient care is safe, effective, timely, efficient, patient-centered, equitable, and designed to improve population health, while reducing per capita costs. In addition, there should be a focus on improving the clinician's well-being as a means to improve patient care and reduce burnout among residents, fellows, and practicing physicians.

IV.B.1.b).(1) **Fellows must be able to provide patient care that is patient- and family-centered, compassionate, equitable, appropriate, and effective for the treatment of health problems and the promotion of health.** (Core)

IV.B.1.b).(1).(a) Fellows must demonstrate competence as consultants under the supervision of neuroendovascular intervention practitioners. (Core)

IV.B.1.b).(1).(b) Fellows must demonstrate competence in:

IV.B.1.b).(1).(b).(i) recognizing the signs and symptoms of disorders amenable to diagnosis and treatment by neuroendovascular intervention techniques; (Core)

IV.B.1.b).(1).(b).(ii) the recognition and management of indications and contraindications to neuroendovascular intervention procedures; (Core)

IV.B.1.b).(1).(b).(iii) managing the pre- and post-operative care of endovascular patients; and, (Core)

IV.B.1.b).(1).(b).(iv) managing patients requiring neurointensive care. (Core)

IV.B.1.b).(2) **Fellows must be able to perform all medical, diagnostic, and surgical procedures considered essential for the area of practice. (Core)**

IV.B.1.b).(2).(a) Fellows must participate in and demonstrate competence in:

IV.B.1.b).(2).(a).(i) personally performing and analyzing a broad spectrum of endovascular procedures; (Core)

IV.B.1.b).(2).(a).(ii) the management of patients with neurological disease, the performance of neuroendovascular intervention procedures, and the integration of neuroendovascular intervention therapy into the clinical management of patients; (Core)

IV.B.1.b).(2).(a).(iii) performing clinical pre-procedure evaluations of patients and their preliminary diagnostic studies, and consulting with clinicians on other services; (Core)

IV.B.1.b).(2).(a).(iv) performing diagnostic and therapeutic neuroendovascular intervention procedures; (Core)

IV.B.1.b).(2).(a).(v) performing physical examinations to evaluate patients with neurological disorders; (Core)

IV.B.1.b).(2).(a).(vi) performing neurological examinations to evaluate patients with neurological disorders; (Core)

IV.B.1.b).(2).(a).(vii) generating procedural reports; and, (Core)

IV.B.1.b).(2).(a).(viii) providing short- and long-term post-procedure follow-up care, including neurointensive care. (Core)

IV.B.1.b).(2).(a).(viii).(a) The continuity of care must be of sufficient duration to ensure the fellow is familiar with the outcome of all neuroendovascular intervention procedures. (Core)

IV.B.1.c) Medical Knowledge

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, including scientific inquiry, as well as the application of this knowledge to patient care. (Core)

IV.B.1.c).(1) Fellows must demonstrate knowledge of the:

IV.B.1.c).(1).(a) clinical and technical aspects of neuroendovascular intervention procedures; (Core)

IV.B.1.c).(1).(b) fundamentals of imaging physics and radiation biology; (Core)

IV.B.1.c).(1).(c) interpretation of neuroangiographic studies pertinent to the practice; (Core)

IV.B.1.c).(1).(d) medical and surgical alternatives to neuroendovascular intervention procedures; and, (Core)

IV.B.1.c).(1).(e) pathophysiology and natural history of relevant neurological disorders. (Core)

IV.B.1.c).(2) Fellows must demonstrate knowledge of the following didactic component areas:

IV.B.1.c).(2).(a) anatomical and physiologic basic knowledge, including: (Core)

IV.B.1.c).(2).(a).(i) arterial and venous angiographic anatomy of the brain, spine, spinal cord, and head and neck, to include: (Core)

IV.B.1.c).(2).(a).(i).(a) autoregulation; (Core)

IV.B.1.c).(2).(a).(i).(b) cerebral blood flow; (Core)

IV.B.1.c).(2).(a).(i).(c) collateral circulation; (Core)

IV.B.1.c).(2).(a).(i).(d) dangerous anastomosis; (Core)

IV.B.1.c).(2).(a).(i).(e) variants of anatomy; and, (Core)

IV.B.1.c).(2).(a).(i).(f) vascular distributions and supply/drainage. (Core)

IV.B.1.c).(2).(a).(ii) related bony and soft tissue anatomy and physiology, to include: (Core)

IV.B.1.c).(2).(a).(ii).(a) brain, neck, face, and spine soft tissue anatomy and physiology; (Core)

IV.B.1.c).(2).(a).(ii).(b) ligamentous, articular and muscular anatomy; and, (Core)

IV.B.1.c).(2).(a).(ii).(c) vertebral, face, and skull bony anatomy. (Core)

IV.B.1.c).(2).(b) pharmacology of the CNS and vasculature and relevant brain physiology, including: (Core)

IV.B.1.c).(2).(b).(i) agents used in provocative testing; (Core)

IV.B.1.c).(2).(b).(ii) coagulation cascade; (Core)

IV.B.1.c).(2).(b).(ii).(a) antiaggregants; (Core)

IV.B.1.c).(2).(b).(ii).(b) anticoagulants; and, (Core)

IV.B.1.c).(2).(b).(ii).(c) thrombolytics. (Core)

IV.B.1.c).(2).(b).(iii) contrast agents; and, (Core)

IV.B.1.c).(2).(b).(iv) vasodilators and constrictors. (Core)

IV.B.1.c).(2).(c) embolic, sclerosing, ablative, and bone stabilization agents, including: (Core)

IV.B.1.c).(2).(c).(i) allergic reaction control; (Core)

IV.B.1.c).(2).(c).(ii)	blood pressure control; (Core)
IV.B.1.c).(2).(c).(iii)	heart rate control; (Core)
IV.B.1.c).(2).(c).(iv)	infection; and, (Core)
IV.B.1.c).(2).(c).(v)	stroke risk reduction. (Core)
IV.B.1.c).(2).(d)	technical aspects of neuroendovascular intervention, including: (Core)
IV.B.1.c).(2).(d).(i)	catheter and delivery systems; (Core)
IV.B.1.c).(2).(d).(ii)	collateral network manipulations and flow diversion; (Core)
IV.B.1.c).(2).(d).(iii)	complications of angiography and embolization; (Core)
IV.B.1.c).(2).(d).(iv)	direct access/therapeutic injection techniques, to include biopsy and aspiration; (Core)
IV.B.1.c).(2).(d).(v)	electrophysiology; (Core)
IV.B.1.c).(2).(d).(vi)	embolic, sclerosing, and stabilizing agents in cerebral, spinal, and head and neck embolization; (Core)
IV.B.1.c).(2).(d).(vii)	flow-controlled navigations and embolization; (Core)
IV.B.1.c).(2).(d).(viii)	imaging of the vascular system; (Core)
IV.B.1.c).(2).(d).(ix)	provocative testing; and, (Core)
IV.B.1.c).(2).(d).(x)	stents, balloons, and revascularization devices. (Core)
IV.B.1.c).(3)	Fellows 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: (Core)
IV.B.1.c).(3).(a)	arteriopathies; (Core)
IV.B.1.c).(3).(b)	arteriovenous malformations and fistulae; (Core)

IV.B.1.c).(3).(c) hemorrhage and epistaxis; (Core)

IV.B.1.c).(3).(d) other vascular malformations and lesions; (Core)

IV.B.1.c).(3).(e) stroke and cerebral ischemia; (Core)

IV.B.1.c).(3).(f) tumors; (Core)

IV.B.1.c).(3).(g) vascular trauma; and, (Core)

IV.B.1.c).(3).(h) vertebral fracture and degeneration. (Core)

IV.B.1.d) Practice-based Learning and Improvement

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

IV.B.1.e) 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. (Core)

IV.B.1.f) Systems-based Practice

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

IV.C. Curriculum Organization and Fellow Experiences

IV.C.1. The curriculum must be structured to optimize fellow educational experiences, the length of the experiences, and the supervisory continuity. These educational experiences include an appropriate blend of supervised patient care responsibilities, clinical teaching, and didactic educational events. (Core)

IV.C.1.a) The assignment of educational experiences should be structured to minimize the frequency of transitions. (Detail)

IV.C.1.b) Educational experiences should be of sufficient length to provide a quality educational experience defined by ongoing supervision, longitudinal relationships with faculty members, and high-quality assessment and feedback. (Detail)

IV.C.2. **The program must provide instruction and experience in pain management if applicable for the subspecialty, including recognition of the signs of substance use disorder.** (Core)

IV.C.3. The curriculum:

IV.C.3.a) must include 24 continuous months of neuroendovascular intervention clinical training under close supervision; (Core)

IV.C.3.b) must include didactic and clinical experiences that encompass the full clinical spectrum of neuroendovascular intervention therapy; (Core)

IV.C.3.c) should include procedural education using simulation; (Detail)

IV.C.3.d) should include education and experience in invasive functional testing; and, (Detail)

IV.C.3.e) must include training in neuroendovascular intervention in an environment conducive to investigative studies of a clinical or basic science nature. (Core)

IV.C.4. Didactics

IV.C.4.a) Formal teaching conferences specifically developed for the fellows must be provided. (Core)

IV.C.4.a).(1) Teaching conferences must be organized by the program faculty members and held at least once a week. (Core)

IV.C.4.a).(2) Conferences must include journal clubs, pathology meetings, and neuroanatomy dissection, simulation, and flow-model courses. (Core)

IV.C.4.a).(3) Journal club must be held on a quarterly basis. (Core)

IV.C.4.a).(4) Morbidity and mortality review conferences related to the performance of neuroendovascular intervention procedures must be held at least monthly. (Core)

IV.C.4.a).(4).(a) These reviews should be interdisciplinary and include joint conferences with neurology, neurological surgery, and radiology. (Core)

IV.C.4.a).(4).(b) Fellows must actively participate in these reviews. (Core)

IV.C.4.a).(5) Teaching conferences must cover the full extent of neuroendovascular intervention, including the use of minimally invasive catheter-based technology, radiologic

imaging, and clinical expertise to diagnose and treat diseases of the CNS, head, neck, and spine. (Core)

IV.C.4.a).(6) Conference formats should allow for interactive discussion of the selected topics. (Detail)

IV.C.4.b) Fellows must attend and participate in conferences. (Core)

IV.C.4.b).(1) Protected didactic and interactive conference time must be provided, including for interdepartmental meetings with neurosurgeons, neuroradiologists, and neurologists. (Core)

IV.C.4.b).(2) Each fellow should attend and actively participate in interdepartmental meetings and conferences with child neurology or neurology, neurological surgery, neuropathology, and neuroradiology. (Detail)

Subspecialty-Specific Background and Intent: The Review Committee values the contributions of extramural education towards enhancing the fellows' overall educational experience. Fellow attendance and participation in local extramural conferences, national meetings, or post-graduate coursework in neuroendovascular intervention therapy during the program is encouraged.

IV.C.5. Fellow Experiences

IV.C.5.a) Each fellow must complete a minimum of 250 interventional procedures, which must include: (Core)

IV.C.5.a).(1) 40 aneurysm treatments, including 10 ruptured aneurysms; (Core)

IV.C.5.a).(2) 20 intracranial embolizations (AVM, AVF, tumor); (Core)

IV.C.5.a).(3) 20 intracranial or extracranial stent placements (at least five in each category); (Core)

IV.C.5.a).(4) 40 acute ischemic stroke treatments; (Core)

IV.C.5.a).(5) 15 head and neck embolizations; and, (Core)

IV.C.5.a).(6) five spinal angiograms and/or embolizations. (Core)

IV.C.5.b) Each fellow must maintain a personal case log of their clinical experiences, which must be verified by the program director at the completion of the program. (Core)

IV.C.5.c) Fellows must participate in daily rounds with the neuroendovascular intervention faculty members during which patient management decisions are discussed and made. (Core)

IV.C.5.d) Direct supervision of fellow interactions with patients must be

ensured so that appropriate standards of care and concern for patient welfare are strictly maintained. (Core)

IV.C.5.d).(1) Fellow communication, consultation, and coordination of care with the referring clinical staff members and clinical services must be maintained and documented with appropriate notes in the medical record. (Detail)

IV.D. Scholarship

Medicine is both an art and a science. The physician is a humanistic scientist who cares for patients. This requires the ability to think critically, evaluate the literature, appropriately assimilate new knowledge, and practice lifelong learning. The program and faculty must create an environment that fosters the acquisition of such skills through fellow participation in scholarly activities as defined in the subspecialty-specific Program Requirements. Scholarly activities may include discovery, integration, application, and teaching.

The ACGME recognizes the diversity of fellowships and anticipates that programs prepare physicians for a variety of roles, including clinicians, scientists, and educators. It is expected that the program's scholarship will reflect its mission(s) and aims, and the needs of the community it serves. For example, some programs may concentrate their scholarly activity on quality improvement, population health, and/or teaching, while other programs might choose to utilize more classic forms of biomedical research as the focus for scholarship.

IV.D.1. Program Responsibilities

IV.D.1.a) The program must demonstrate evidence of scholarly activities, consistent with its mission(s) and aims. (Core)

IV.D.1.b) The program in partnership with its Sponsoring Institution, must allocate adequate resources to facilitate fellow and faculty involvement in scholarly activities. (Core)

IV.D.2. Faculty Scholarly Activity

IV.D.2.a) Among their scholarly activity, programs must demonstrate accomplishments in at least three of the following domains: (Core)

- **Research in basic science, education, translational science, patient care, or population health**
- **Peer-reviewed grants**
- **Quality improvement and/or patient safety initiatives**
- **Systematic reviews, meta-analyses, review articles, chapters in medical textbooks, or case reports**

- **Creation of curricula, evaluation tools, didactic educational activities, or electronic educational materials**
- **Contribution to professional committees, educational organizations, or editorial boards**
- **Innovations in education**

IV.D.2.b) **The program must demonstrate dissemination of scholarly activity within and external to the program by the following methods:**

Background and Intent: For the purposes of education, metrics of scholarly activity represent one of the surrogates for the program's effectiveness in the creation of an environment of inquiry that advances the fellows' scholarly approach to patient care. The Review Committee will evaluate the dissemination of scholarship for the program as a whole, not for individual faculty members, for a five-year interval, for both core and non-core faculty members, with the goal of assessing the effectiveness of the creation of such an environment. The ACGME recognizes that there may be differences in scholarship requirements between different specialties and between residencies and fellowships in the same specialty.

IV.D.2.b).(1) **faculty participation in grand rounds, posters, workshops, quality improvement presentations, podium presentations, grant leadership, non-peer-reviewed print/electronic resources, articles or publications, book chapters, textbooks, webinars, service on professional committees, or serving as a journal reviewer, journal editorial board member, or editor;** **(Outcome)**

IV.D.2.b).(2) **peer-reviewed publication.** **(Outcome)**

IV.D.3. Fellow Scholarly Activity

IV.D.3.a) 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. (Core)

IV.D.3.b) Fellows should participate in scholarly activity. (Detail)

IV.D.3.c) Fellows should participate in research activities with residents and staff members in other related specialties. (Detail)

V. Evaluation

V.A. Fellow Evaluation

V.A.1. Feedback and Evaluation

Background and Intent: Feedback is ongoing information provided regarding aspects of one's performance, knowledge, or understanding. The faculty empower fellows to provide much of that feedback themselves in a spirit of continuous learning and self-reflection. Feedback from faculty members in the context of routine clinical care should be frequent, and need not always be formally documented.

Formative and summative evaluation have distinct definitions. Formative evaluation is *monitoring fellow learning* and providing ongoing feedback that can be used by fellows to improve their learning in the context of provision of patient care or other educational opportunities. More specifically, formative evaluations help:

- **fellows identify their strengths and weaknesses and target areas that need work**
- **program directors and faculty members recognize where fellows are struggling and address problems immediately**

Summative evaluation is *evaluating a fellow's learning* by comparing the fellows against the goals and objectives of the rotation and program, respectively. Summative evaluation is utilized to make decisions about promotion to the next level of training, or program completion.

End-of-rotation and end-of-year evaluations have both summative and formative components. Information from a summative evaluation can be used formatively when fellows or faculty members use it to guide their efforts and activities in subsequent rotations and to successfully complete the fellowship program.

Feedback, formative evaluation, and summative evaluation compare intentions with accomplishments, enabling the transformation of a new specialist to one with growing subspecialty expertise.

V.A.1.a) **Faculty members must directly observe, evaluate, and frequently provide feedback on fellow performance during each rotation or similar educational assignment.** **(Core)**

V.A.1.a).(1) Assessment should include regular evaluation of fellows' knowledge, skills, and overall performance, including the development of professional attitudes consistent with being a physician. (Core)

V.A.1.a).(1).(a) The assessment must include cognitive, motor, and interpersonal skills, as well as judgment. (Core)

V.A.1.a).(2) The program must provide the fellows with quarterly feedback to communicate performance evaluations and discuss their procedure logs. (Core)

Background and Intent: Faculty members should provide feedback frequently throughout the course of each rotation. Fellows require feedback from faculty members to reinforce well-performed duties and tasks, as well as to correct deficiencies. This feedback will allow for the development of the learner as they strive to achieve the Milestones. More frequent feedback is strongly encouraged for fellows who have deficiencies that may result in a poor final rotation evaluation.

V.A.1.b) **Evaluation must be documented at the completion of the assignment.** (Core)

V.A.1.b).(1) **For block rotations of greater than three months in duration, evaluation must be documented at least every three months.** (Core)

V.A.1.b).(2) **Longitudinal experiences such as continuity clinic in the context of other clinical responsibilities must be evaluated at least every three months and at completion.** (Core)

V.A.1.c) **The program must provide an objective performance evaluation based on the Competencies and the subspecialty-specific Milestones, and must:** (Core)

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

V.A.1.c).(2) **provide that information to the Clinical Competency Committee for its synthesis of progressive fellow performance and improvement toward unsupervised practice.** (Core)

Background and Intent: The trajectory to autonomous practice in a subspecialty is documented by the subspecialty-specific Milestones evaluation during fellowship. These Milestones detail the progress of a fellow in attaining skill in each competency domain. It is expected that the most growth in fellowship education occurs in patient care and medical knowledge, while the other four domains of competency must be ensured in the context of the subspecialty. They are developed by a subspecialty group and allow evaluation based on observable behaviors. The Milestones are considered formative and should be used to identify learning needs. This may lead to focused or general curricular revision in any given program or to individualized learning plans for any specific fellow.

V.A.1.d) **The program director or their designee, with input from the Clinical Competency Committee, must:**

V.A.1.d).(1) **meet with and review with each fellow their documented semi-annual evaluation of performance, including progress along the subspecialty-specific Milestones;** (Core)

V.A.1.d).(2) **assist fellows in developing individualized learning plans to capitalize on their strengths and identify areas for growth; and,** (Core)

V.A.1.d).(3) **develop plans for fellows failing to progress, following institutional policies and procedures.** (Core)

Background and Intent: Learning is an active process that requires effort from the teacher and the learner. Faculty members evaluate a fellow's performance at least at the end of each rotation. The program director or their designee will review those evaluations, including their progress on the Milestones, at a minimum of every six months. Fellows should be encouraged to reflect upon the evaluation, using the information to reinforce well-performed tasks or knowledge or to modify deficiencies in knowledge or practice. Working together with the faculty members, fellows should develop an individualized learning plan.

Fellows who are experiencing difficulties with achieving progress along the Milestones may require intervention to address specific deficiencies. Such intervention, documented in an individual remediation plan developed by the program director or a faculty mentor and the fellow, will take a variety of forms based on the specific learning needs of the fellow. However, the ACGME recognizes that there are situations which require more significant intervention that may alter the time course of fellow progression. To ensure due process, it is essential that the program director follow institutional policies and procedures.

V.A.1.e) **At least annually, there must be a summative evaluation of each fellow that includes their readiness to progress to the next year of the program, if applicable.** (Core)

V.A.1.f) **The evaluations of a fellow's performance must be accessible for review by the fellow.** (Core)

V.A.2. **Final Evaluation**

V.A.2.a) **The program director must provide a final evaluation for each fellow upon completion of the program.** (Core)

V.A.2.a).(1) **The subspecialty-specific Milestones, and when applicable the subspecialty-specific Case Logs, must be used as tools to ensure fellows are able to engage in autonomous practice upon completion of the program.** (Core)

V.A.2.a).(2) **The final evaluation must:**

V.A.2.a).(2).(a) **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;** (Core)

V.A.2.a).(2).(b) **verify that the fellow has demonstrated the knowledge, skills, and behaviors necessary to enter autonomous practice; and,** (Core)

V.A.2.a).(2).(c) **be shared with the fellow upon completion of the program.** (Core)

V.A.3. **A Clinical Competency Committee must be appointed by the program director.** (Core)

V.A.3.a) **At a minimum the Clinical Competency Committee must include three members, at least one of whom is a core faculty member. Members must be faculty members from the same program or other programs, or other health professionals who have extensive contact and experience with the program's fellows.** (Core)

Background and Intent: The requirements regarding the Clinical Competency Committee do not preclude or limit a program director's participation on the Clinical Competency Committee. The intent is to leave flexibility for each program to decide the best structure for its own circumstances, but a program should consider: its program director's other roles as fellow advocate, advisor, and confidante; the impact of the program director's presence on the other Clinical Competency Committee members' discussions and decisions; the size of the program faculty; and other program-relevant factors. Inclusivity is an important consideration in the appointment of Clinical Competency Committee members, ensuring diverse participation to achieve fair evaluation. The program director has final responsibility for fellow evaluation and promotion decisions.

The program faculty may include more than the physician faculty members, such as other physicians and non-physicians who teach and evaluate the program's fellows. There may be additional members of the Clinical Competency Committee.

V.A.3.b) **The Clinical Competency Committee must:**

V.A.3.b).(1) **review all fellow evaluations at least semi-annually;** (Core)

V.A.3.b).(2) **determine each fellow's progress on achievement of the subspecialty-specific Milestones; and,** (Core)

V.A.3.b).(3) **meet prior to the fellows' semi-annual evaluations and advise the program director regarding each fellow's progress.** (Core)

V.B. **Faculty Evaluation**

V.B.1. **The program must have a process to evaluate each faculty member's performance as it relates to the educational program at least annually.** (Core)

Background and Intent: The program director is responsible for the educational program and for all educators. While the term "faculty" may be applied to physicians within a given institution for other reasons, it is applied to fellowship program faculty members only through approval by a program director. The development of the faculty improves the education, clinical, and research aspects of a program. Faculty members have a strong commitment to the fellow and desire to provide optimal education and work opportunities. Faculty members must be provided feedback on their contribution

to the mission of the program. All faculty members who interact with fellows desire feedback on their education, clinical care, and research. If a faculty member does not interact with fellows, feedback is not required. With regard to the diverse operating environments and configurations, the fellowship program director may need to work with others to determine the effectiveness of the program's faculty performance with regard to their role in the educational program. All teaching faculty members should have their educational efforts evaluated by the fellows in a confidential and anonymous manner. Other aspects for the feedback may include research or clinical productivity, review of patient outcomes, or peer review of scholarly activity. The process should reflect the local environment and identify the necessary information. The feedback from the various sources should be summarized and provided to the faculty on an annual basis by a member of the leadership team of the program.

V.B.1.a) **This evaluation must include a review of the faculty member's clinical teaching abilities, engagement with the educational program, participation in faculty development related to their skills as an educator, clinical performance, professionalism, and scholarly activities.** (Core)

V.B.1.b) **This evaluation must include written, confidential evaluations by the fellows.** (Core)

V.B.2. **Faculty members must receive feedback on their evaluations at least annually.** (Core)

V.B.3. **Results of the faculty educational evaluations should be incorporated into program-wide faculty development plans.** (Core)

Background and Intent: The quality of the faculty's teaching and clinical care is a determinant of the quality of the program and the quality of the fellows' future clinical care. Therefore, the program has the responsibility to evaluate and improve the program faculty members' teaching, scholarship, professionalism, and quality care. This section mandates annual review of the program's faculty members for this purpose, and can be used as input into the Annual Program Evaluation.

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

V.C.1. **The program director must appoint the Program Evaluation Committee to conduct and document the Annual Program Evaluation as part of the program's continuous improvement process.** (Core)

V.C.1.a) **The Program Evaluation Committee must be composed of at least two program faculty members, at least one of whom is a core faculty member, and at least one fellow.** (Core)

V.C.1.b) **Program Evaluation Committee responsibilities must include:**

V.C.1.b).(1) **review of the program's self-determined goals and progress toward meeting them;** (Core)

V.C.1.b).(2) guiding ongoing program improvement, including development of new goals, based upon outcomes; and, (Core)

V.C.1.b).(3) review of the current operating environment to identify strengths, challenges, opportunities, and threats as related to the program's mission and aims. (Core)

Background and Intent: To achieve its mission and educate and train quality physicians, a program must evaluate its performance and plan for improvement in the Annual Program Evaluation. Performance of fellows and faculty members is a reflection of program quality, and can use metrics that reflect the goals that a program has set for itself. The Program Evaluation Committee utilizes outcome parameters and other data to assess the program's progress toward achievement of its goals and aims. The Program Evaluation Committee advises the program director through program oversight.

V.C.1.c) The Program Evaluation Committee should consider the outcomes from prior Annual Program Evaluation(s), aggregate fellow and faculty written evaluations of the program, and other relevant data in its assessment of the program. (Core)

Background and Intent: Other data to be considered for assessment include:

- **Curriculum**
- **ACGME letters of notification, including citations, Areas for Improvement, and comments**
- **Quality and safety of patient care**
- **Aggregate fellow and faculty well-being; recruitment and retention; workforce diversity, including graduate medical education staff and other relevant academic community members; engagement in quality improvement and patient safety; and scholarly activity**
- **ACGME Fellow and Faculty Survey results**
- **Aggregate fellow Milestones evaluations, and achievement on in-training examinations (where applicable), board pass and certification rates, and graduate performance**
- **Aggregate faculty evaluation and professional development**

V.C.1.d) The Program Evaluation Committee must evaluate the program's mission and aims, strengths, areas for improvement, and threats. (Core)

V.C.1.e) The Annual Program Evaluation, including the action plan, must be distributed to and discussed with the fellows and the members of the teaching faculty, and be submitted to the DIO. (Core)

V.C.2. The program must participate in a Self-Study and submit it to the DIO. (Core)

Background and Intent: Outcomes of the documented Annual Program Evaluation can be integrated into the accreditation Self-Study process. The accreditation Self-Study is an objective, comprehensive evaluation of the fellowship program, with the aim of improving it. Underlying the accreditation Self-Study is this longitudinal evaluation of the program and its learning environment, facilitated through sequential Annual Program Evaluations that focus on the required components, with an emphasis on program strengths and self-identified areas for improvement. Details regarding the timing and expectations for the accreditation Self-Study are provided in the *ACGME Manual of Policies and Procedures*. Additionally, a description of the accreditation Self-Study process is available on the ACGME website.

VI. The Learning and Working Environment

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

- ***Excellence in the safety and quality of care rendered to patients by fellows today***
- ***Excellence in the safety and quality of care rendered to patients by today's fellows in their future practice***
- ***Excellence in professionalism***
- ***Appreciation for the privilege of providing care for patients***
- ***Commitment to the well-being of the students, residents, fellows, faculty members, and all members of the health care team***

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

VI.A.1. Patient Safety and Quality Improvement

VI.A.1.a) Patient Safety

VI.A.1.a).(1) Culture of Safety

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

VI.A.1.a).(1).(a) **The program, its faculty, residents, and fellows must actively participate in patient safety systems and contribute to a culture of safety.** **(Core)**

VI.A.1.a).(2) Patient Safety Events

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

VI.A.1.a).(2).(a) **Residents, fellows, faculty members, and other clinical staff members must:**

VI.A.1.a).(2).(a).(i) **know their responsibilities in reporting patient safety events and unsafe conditions at the clinical site, including how to report such events; and, (Core)**

VI.A.1.a).(2).(a).(ii) **be provided with summary information of their institution's patient safety reports. (Core)**

VI.A.1.a).(2).(b) **Fellows must participate as team members in real and/or simulated interprofessional clinical patient safety and quality improvement activities, such as root cause analyses or other activities that include analysis, as well as formulation and implementation of actions. (Core)**

VI.A.1.a).(3) **Quality Metrics**

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

VI.A.1.a).(3).(a) **Fellows and faculty members must receive data on quality metrics and benchmarks related to their patient populations. (Core)**

VI.A.2. **Supervision and Accountability**

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

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

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

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

Background and Intent: Each patient will have an identifiable and appropriately credentialed and privileged attending physician (or licensed independent practitioner as specified by the applicable Review Committee) who is responsible and accountable for the patient's care.

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

Background and Intent: Appropriate supervision is essential for patient safety and high-quality teaching. Supervision is also contextual. There is tremendous diversity of fellow-patient interactions, training locations, and fellow skills and abilities, even at the same level of the educational program. The degree of supervision is expected to evolve progressively as a fellow gains more experience, even with the same patient condition or procedure. The level of supervision for each fellow is commensurate with that fellow's level of independence in practice; this level of supervision may be enhanced based on factors such as patient safety, complexity, acuity, urgency, risk of serious safety events, or other pertinent variables.

VI.A.2.b) **Levels of Supervision**

To promote appropriate fellow supervision while providing for graded authority and responsibility, the program must use the following classification of supervision:

VI.A.2.b).(1) **Direct Supervision:**

VI.A.2.b).(1).(a) **the supervising physician is physically present with the fellow during the key portions of the patient interaction; or,**

VI.A.2.b).(1).(b) **the supervising physician and/or patient is not physically present with the fellow and the supervising physician is concurrently**

monitoring the patient care through appropriate telecommunication technology.

VI.A.2.b).(1).(b).(i) The program must have clear guidelines that delineate which competencies must be demonstrated to determine when a fellow can progress to indirect supervision. (Core)

VI.A.2.b).(1).(b).(i).(a) These guidelines should stipulate that indirect supervision using telecommunication technology should be limited to patient evaluation for treatment and/or patient follow-up visits and should not be used in the performance of neuroendovascular intervention procedures. (Core)

VI.A.2.b).(1).(b).(ii) The program director must ensure that clear expectations exist and are communicated to the fellows, and that these expectations outline specific situations in which a fellow still requires direct supervision. (Core)

VI.A.2.b).(2) Indirect Supervision: the supervising physician is not providing physical or concurrent visual or audio supervision but is immediately available to the fellow for guidance and is available to provide appropriate direct supervision.

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

VI.A.2.c) The program must define when physical presence of a supervising physician is required. (Core)

VI.A.2.d) 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. (Core)

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

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

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

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

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

Background and Intent: The ACGME Glossary of Terms defines conditional independence as: Graded, progressive responsibility for patient care with defined oversight.

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

VI.B. Professionalism

VI.B.1. **Programs, in partnership with their Sponsoring Institutions, must educate fellows and faculty members concerning the professional and ethical responsibilities of physicians, including but not limited to their obligation to be appropriately rested and fit to provide the care required by their patients.** (Core)

Background and Intent: This requirement emphasizes the professional responsibility of fellows and faculty members to arrive for work adequately rested and ready to care for patients. It is also the responsibility of fellows, faculty members, and other members of the care team to be observant, to intervene, and/or to escalate their concern about fellow and faculty member fitness for work, depending on the situation, and in accordance with institutional policies. This includes recognition of impairment, including from illness, fatigue, and substance use, in themselves, their peers, and other members of the health care team, and the recognition that under certain circumstances, the best interests of the patient may be served by transitioning that patient's care to another qualified and rested practitioner.

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

VI.B.2.a) **be accomplished without excessive reliance on fellows to fulfill non-physician obligations;** (Core)

Background and Intent: Routine reliance on fellows to fulfill non-physician obligations increases work compression for fellows and does not provide an optimal educational

experience. Non-physician obligations are those duties which in most institutions are performed by nursing and allied health professionals, transport services, or clerical staff. Examples of such obligations include transport of patients from the wards or units for procedures elsewhere in the hospital; routine blood drawing for laboratory tests; routine monitoring of patients when off the ward; and clerical duties, such as scheduling. While it is understood that fellows may be expected to do any of these things on occasion when the need arises, these activities should not be performed by fellows routinely and must be kept to a minimum to optimize fellow education.

VI.B.2.b) **ensure manageable patient care responsibilities; and, (Core)**

Background and Intent: The Common Program Requirements do not define "manageable patient care responsibilities" as this is variable by specialty/subspecialty and PGY level. Review Committees will provide further detail regarding patient care responsibilities in the applicable specialty- and subspecialty-specific Program Requirements and accompanying FAQs. However, all programs, regardless of specialty/subspecialty, should carefully assess how the assignment of patient care responsibilities can affect work compression.

VI.B.2.c) **include efforts to enhance the meaning that each fellow finds in the experience of being a physician, including protecting time with patients, providing administrative support, promoting progressive independence and flexibility, and enhancing professional relationships. (Core)**

VI.B.3. **The program director, in partnership with the Sponsoring Institution, must provide a culture of professionalism that supports patient safety and personal responsibility. (Core)**

Background and Intent: The accurate reporting of clinical and educational work hours, patient outcomes, and clinical experience data are the responsibility of the program leadership, fellows, and faculty.

VI.B.4. **Fellows and faculty members must demonstrate an understanding of their personal role in the safety and welfare of patients entrusted to their care, including the ability to report unsafe conditions and safety events. (Core)**

VI.B.5. **Programs, in partnership with their Sponsoring Institutions, must provide a professional, equitable, respectful, and civil environment that is psychologically safe and that is free from discrimination, sexual and other forms of harassment, mistreatment, abuse, or coercion of students, fellows, faculty, and staff. (Core)**

Background and Intent: Psychological safety is defined as an environment of trust and respect that allows individuals to feel able to ask for help, admit mistakes, raise concerns, suggest ideas, and challenge ways of working and the ideas of others on the team, including the ideas of those in authority, without fear of humiliation, and the knowledge that mistakes will be handled justly and fairly.

The ACGME is unable to adjudicate disputes between individuals, including residents, faculty members, and staff members. However, information that suggests a pattern of behavior that violates the requirement above will trigger a careful review and, if deemed appropriate, action by the Review Committee and/or ACGME, in accordance with ACGME Policies and Procedures.

VI.B.6. **Programs, in partnership with their Sponsoring Institutions, should have a process for education of fellows and faculty regarding unprofessional behavior and a confidential process for reporting, investigating, and addressing such concerns.** (Core)

VI.C. Well-Being

Psychological, emotional, and physical well-being are critical in the development of the competent, caring, and resilient physician and require proactive attention to life inside and outside of medicine. Well-being requires that physicians retain the joy in medicine while managing their own real-life stresses. Self-care and responsibility to support other members of the health care team are important components of professionalism; they are also skills that must be modeled, learned, and nurtured in the context of other aspects of fellowship training.

Fellows and faculty members are at risk for burnout and depression. Programs, in partnership with their Sponsoring Institutions, have the same responsibility to address well-being as other aspects of resident competence. Physicians and all members of the health care team share responsibility for the well-being of each other. A positive culture in a clinical learning environment models constructive behaviors, and prepares fellows with the skills and attitudes needed to thrive throughout their careers.

VI.C.1. **The responsibility of the program, in partnership with the Sponsoring Institution, must include:**

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

VI.C.1.b) **evaluating workplace safety data and addressing the safety of fellows and faculty members;** (Core)

Background and Intent: This requirement emphasizes the responsibility shared by the Sponsoring Institution and its programs to gather information and utilize systems that monitor and enhance fellow and faculty member safety, including physical safety. Issues to be addressed include, but are not limited to, monitoring of workplace injuries, physical or emotional violence, vehicle collisions, and emotional well-being after safety events.

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

Background and Intent: Well-being includes having time away from work to engage with family and friends, as well as to attend to personal needs and to one's own health, including adequate rest, healthy diet, and regular exercise. The intent of this requirement is to ensure that fellows have the opportunity to access medical and dental care, including mental health care, at times that are appropriate to their individual circumstances. Fellows must be provided with time away from the program as needed to access care, including appointments scheduled during their working hours.

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

VI.C.1.d) **education of fellows and faculty members in:**

VI.C.1.d).(1) **identification of the symptoms of burnout, depression, and substance use disorders, suicidal ideation, or potential for violence, including means to assist those who experience these conditions;** (Core)

VI.C.1.d).(2) **recognition of these symptoms in themselves and how to seek appropriate care; and,** (Core)

VI.C.1.d).(3) **access to appropriate tools for self-screening.** (Core)

Background and Intent: Programs and Sponsoring Institutions are encouraged to review materials in order to create systems for identification of burnout, depression, and substance use disorder. Materials and more information are available in Learn at ACGME (https://dl.acgme.org/pages/well-being-tools-resources).

Individuals experiencing burnout, depression, a substance use disorder, and/or suicidal ideation are often reluctant to reach out for help due to the stigma associated with these conditions and may be concerned that seeking help may have a negative impact on their career. Recognizing that physicians are at increased risk in these areas, it is essential that fellows and faculty members are able to report their concerns when another fellow or faculty member displays signs of any of these conditions, so that the program director or other designated personnel, such as the department chair, may assess the situation and intervene as necessary to facilitate access to appropriate care. Fellows and faculty members must know which personnel, in addition to the program director, have been designated with this responsibility; those personnel and the program director should be familiar with the institution's impaired physician policy and any employee health, employee assistance, and/or wellness/well-being programs within the institution. In cases of physician impairment, the program director or designated personnel should follow the policies of their institution for reporting.

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

Background and Intent: The intent of this requirement is to ensure that fellows have immediate access at all times to a mental health professional (psychiatrist, psychologist, Licensed Clinical Social Worker, Primary Mental Health Nurse Practitioner, or Licensed Professional Counselor) for urgent or emergent mental health issues. In-person, telemedicine, or telephonic means may be utilized to satisfy this requirement. Care in the Emergency Department may be necessary in some cases, but not as the primary or sole means to meet the requirement.

The reference to affordable counseling is intended to require that financial cost not be a barrier to obtaining care.

VI.C.2. **There are circumstances in which fellows may be unable to attend work, including but not limited to fatigue, illness, family emergencies, and medical, parental, or caregiver leave. Each program must allow an appropriate length of absence for fellows unable to perform their patient care responsibilities.** (Core)

VI.C.2.a) **The program must have policies and procedures in place to ensure coverage of patient care and ensure continuity of patient care.** (Core)

VI.C.2.b) **These policies must be implemented without fear of negative consequences for the fellow who is or was unable to provide the clinical work.** (Core)

Background and Intent: Fellows may need to extend their length of training depending on length of absence and specialty board eligibility requirements. Teammates should assist colleagues in need and equitably reintegrate them upon return.

VI.D. **Fatigue Mitigation**

VI.D.1. **Programs must educate all fellows and faculty members in recognition of the signs of fatigue and sleep deprivation, alertness management, and fatigue mitigation processes.** (Detail)

Background and Intent: Providing medical care to patients is physically and mentally demanding. Night shifts, even for those who have had enough rest, cause fatigue. Experiencing fatigue in a supervised environment during training prepares fellows for managing fatigue in practice. It is expected that programs adopt fatigue mitigation processes and ensure that there are no negative consequences and/or stigma for using fatigue mitigation strategies.

Strategies that may be used include, but are not limited to, strategic napping; the judicious use of caffeine; availability of other caregivers; time management to maximize sleep off-duty; learning to recognize the signs of fatigue, and self-monitoring performance and/or asking others to monitor performance; remaining active to promote alertness; maintaining a healthy diet; using relaxation techniques to fall asleep; maintaining a consistent sleep routine; exercising regularly; increasing sleep time before and after call; and ensuring sufficient sleep recovery periods.

VI.D.2. **The program, in partnership with its Sponsoring Institution, must ensure adequate sleep facilities and safe transportation options for fellows who may be too fatigued to safely return home.** (Core)

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

VI.E.1. Clinical Responsibilities

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

Background and Intent: The changing clinical care environment of medicine has meant that work compression due to high complexity has increased stress on fellows. Faculty members and program directors need to make sure fellows function in an environment that has safe patient care and a sense of fellow well-being. It is an essential responsibility of the program director to monitor fellow workload. Workload should be distributed among the fellow team and interdisciplinary teams to minimize work compression.

VI.E.2. Teamwork

Fellows must care for patients in an environment that maximizes communication and promotes safe, interprofessional, team-based care in the subspecialty and larger health system. (Core)

Background and Intent: Effective programs will have a structure that promotes safe, interprofessional, team-based care. Optimal patient safety occurs in the setting of a coordinated interprofessional learning and working environment.

VI.E.3. Transitions of Care

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

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

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

VI.F. Clinical Experience and Education

Programs, in partnership with their Sponsoring Institutions, must design an effective program structure that is configured to provide fellows with

educational and clinical experience opportunities, as well as reasonable opportunities for rest and personal activities.

Background and Intent: The terms "clinical experience and education," "clinical and educational work," and "clinical and educational work hours" replace the terms "duty hours," "duty periods," and "duty." These terms are used in response to concerns that the previous use of the term "duty" in reference to number of hours worked may have led some to conclude that fellows' duty to "clock out" on time superseded their duty to their patients.

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

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

Background and Intent: Programs and fellows have a shared responsibility to ensure that the 80-hour maximum weekly limit is not exceeded. While the requirement has been written with the intent of allowing fellows to remain beyond their scheduled work periods to care for a patient or participate in an educational activity, these additional hours must be accounted for in the allocated 80 hours when averaged over four weeks.

Work from Home

While the requirement specifies that clinical work done from home must be counted toward the 80-hour maximum weekly limit, the expectation remains that scheduling be structured so that fellows are able to complete most work on site during scheduled clinical work hours without requiring them to take work home. The requirements acknowledge the changing landscape of medicine, including electronic health records, and the resulting increase in the amount of work fellows choose to do from home. The requirement provides flexibility for fellows to do this while ensuring that the time spent by fellows completing clinical work from home is accomplished within the 80-hour weekly maximum. Types of work from home that must be counted include using an electronic health record and taking calls from home. Reading done in preparation for the following day's cases, studying, and research done from home do not count toward the 80 hours. Fellow decisions to leave the hospital before their clinical work has been completed and to finish that work later from home should be made in consultation with the fellow's supervisor. In such circumstances, fellows should be mindful of their professional responsibility to complete work in a timely manner and to maintain patient confidentiality.

Fellows are to track the time they spend on clinical work from home and to report that time to the program. Decisions regarding whether to report infrequent phone calls of very short duration will be left to the individual fellow. Programs will need to factor in time fellows are spending on clinical work at home when schedules are developed to ensure that fellows are not working in excess of 80 hours per week, averaged over four weeks. There is no requirement that programs assume responsibility for documenting this time. Rather, the program's responsibility is ensuring that fellows report their time from home and that schedules are structured to ensure that fellows are not working in excess of 80 hours per week, averaged over four weeks.

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

VI.F.2.a) Fellows should have eight hours off between scheduled clinical work and education periods. (Detail)

Background and Intent: There may be circumstances when fellows choose to stay to care for their patients or return to the hospital with fewer than eight hours free of clinical experience and education. This occurs within the context of the 80-hour and the one-day-off-in-seven requirements. While it is expected that fellow schedules will be structured to ensure that fellows are provided with a minimum of eight hours off between scheduled work periods, it is recognized that fellows may choose to remain beyond their scheduled time, or return to the clinical site during this time-off period, to care for a patient. The requirement preserves the flexibility for fellows to make those choices. It is also noted that the 80-hour weekly limit (averaged over four weeks) is a deterrent for scheduling fewer than eight hours off between clinical and education work periods, as it would be difficult for a program to design a schedule that provides fewer than eight hours off without violating the 80-hour rule.

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

Background and Intent: Fellows have a responsibility to return to work rested, and thus are expected to use this time away from work to get adequate rest. In support of this goal, fellows are encouraged to prioritize sleep over other discretionary activities.

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

Background and Intent: The requirement provides flexibility for programs to distribute days off in a manner that meets program and fellow needs. It is strongly recommended that fellows' preference regarding how their days off are distributed be considered as schedules are developed. It is desirable that days off be distributed throughout the month, but some fellows may prefer to group their days off to have a "golden weekend," meaning a consecutive Saturday and Sunday free from work. The requirement for one free day in seven should not be interpreted as precluding a golden weekend. Where feasible, schedules may be designed to provide fellows with a weekend, or two consecutive days, free of work. The applicable Review Committee will evaluate the number of consecutive days of work and determine whether they meet educational objectives. Programs are encouraged to distribute days off in a fashion that optimizes fellow well-being, and educational and personal goals. It is noted that a day off is defined in the ACGME Glossary of Terms as "one (1) continuous 24-hour period free from all administrative, clinical, and educational activities."

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

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

VI.F.3.a).(1) **Up to four hours of additional time may be used for activities related to patient safety, such as providing effective transitions of care, and/or fellow education. Additional patient care responsibilities must not be assigned to a fellow during this time.** (Core)

Background and Intent: The additional time referenced in VI.F.3.a).(1) should not be used for the care of new patients. It is essential that the fellow continue to function as a member of the team in an environment where other members of the team can assess fellow fatigue, and that supervision for post-call fellows is provided. This 24 hours and up to an additional four hours must occur within the context of 80-hour weekly limit, averaged over four weeks.

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

VI.F.4.a) **In rare circumstances, after handing off all other responsibilities, a fellow, on their own initiative, may elect to remain or return to the clinical site in the following circumstances: to continue to provide care to a single severely ill or unstable patient; to give humanistic attention to the needs of a patient or patient's family; or to attend unique educational events.** (Detail)

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

Background and Intent: This requirement is intended to provide fellows with some control over their schedules by providing the flexibility to voluntarily remain beyond the scheduled responsibilities under the circumstances described above. It is important to note that a fellow may remain to attend a conference, or return for a conference later in the day, only if the decision is made voluntarily. Fellows must not be required to stay. Programs allowing fellows to remain or return beyond the scheduled work and clinical education period must ensure that the decision to remain is initiated by the fellow and that fellows are not coerced. This additional time must be counted toward the 80-hour maximum weekly limit.

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

The Review Committees for Neurological Surgery, Neurology, and Radiology will not consider requests for exceptions to the 80-hour limit to the fellows' work week.

VI.F.5. **Moonlighting**

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

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

Background and Intent: For additional clarification of the expectations related to moonlighting, please refer to the Common Program Requirement FAQs (available at http://www.acgme.org/What-We-Do/Accreditation/Common-Program-Requirements).

VI.F.6. **In-House Night Float**

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

VI.F.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. (Detail)

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

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

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

Background and Intent: As noted in VI.F.1., clinical work done from home when a fellow is taking at-home call must count toward the 80-hour maximum weekly limit. This acknowledges the often significant amount of time fellows devote to clinical activities when taking at-home call, and ensures that taking at-home call does not result in fellows routinely working more than 80 hours per week. At-home call activities that must be counted include responding to phone calls and other forms of communication, as well as documentation, such as entering notes in an electronic health record. Activities such as reading about the next day's case, studying, or research activities do not count toward the 80-hour weekly limit.

In their evaluation of fellowship programs, Review Committees will look at the overall impact of at-home call on fellow rest and personal time.