ACGME Program Requirements for
Graduate Medical Education
in Neurological Surgery

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Common Program Requirements are in BOLD

Introduction

Int.A. Residency is an essential dimension of the transformation of the medical student to the independent practitioner along the continuum of medical education. It is physically, emotionally, and intellectually demanding, and requires longitudinally-concentrated effort on the part of the resident.

The specialty education of physicians to practice independently is experiential, and necessarily occurs within the context of the health care delivery system. Developing the skills, knowledge, and attitudes leading to proficiency in all the domains of clinical competency requires the resident physician to assume personal responsibility for the care of individual patients. For the resident, the essential learning activity is interaction with patients under the guidance and supervision of faculty members who give value, context, and meaning to those interactions. As residents gain experience and demonstrate growth in their ability to care for patients, they assume roles that permit them to exercise those skills with greater independence. This concept--graded and progressive responsibility--is one of the core tenets of American graduate medical education. Supervision in the setting of graduate medical education has the goals of assuring the provision of safe and effective care to the individual patient; assuring each resident’s development of the skills, knowledge, and attitudes required to enter the unsupervised practice of medicine; and establishing a foundation for continued professional growth.

Int.B. Neurological surgery is a medical discipline and surgical specialty that provides care for adult and pediatric patients in the treatment of pain or pathological processes that may modify the function or activity of the central nervous system (e.g., brain, hypophysis, and spinal cord), the peripheral nervous system, (e.g., cranial, spinal, and peripheral nerves), the autonomic nervous system, and the supporting structures of these systems (e.g., meninges, skull and skull base, and vertebral column) and their vascular supply (e.g., intracranial, extracranial, and spinal vasculature).

Int.C. Treatment encompasses non-operative management (including prevention, diagnosis, image interpretation, and neurocritical intensive care and rehabilitation) and operative management (including image interpretation, endovascular surgery, functional and restorative surgery, stereotactic radiosurgery, and spinal fusion and instrumentation).

Int.D. The educational program in neurological surgery must be 84 months in length.

I. Institutions

I.A. Sponsoring Institution

Neurological Surgery 1
One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to resident assignments at all participating sites. (Core)

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

I.A.1. The sponsoring institution must demonstrate commitment to the program in terms of financial and academic support, including timely appointment of a permanent department or division chairperson of neurological surgery. (Core)

I.A.2. ACGME-accredited programs in anesthesiology, diagnostic radiology, internal medicine, neurology, pediatrics, and surgery, should be available at either the primary clinical site or a participating site. (Core)

I.B. Participating Sites

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

The PLA should:

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

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

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

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

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

I.B.3. The program director should ensure peer interaction and regular attendance of residents at joint conferences and other activities regardless of the location of their assigned rotations. (Detail)

I.B.4. The addition or deletion of any participating site, as well as any change in
rotations at an existing participating site, must be approved by the Review Committee prior to assigning any residents to that site.  

II. Program Personnel and Resources

II.A. Program Director

II.A.1. There must be a single program director with authority and accountability for the operation of the program. The sponsoring institution’s GMEC must approve a change in program director.

II.A.1.a) The program director must submit this change to the ACGME via the ADS.

II.A.2. The program director should continue in his or her position for a length of time adequate to maintain continuity of leadership and program stability.

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

II.A.3.a) requisite specialty expertise and documented educational and administrative experience acceptable to the Review Committee;

II.A.3.b) current certification in the specialty by the American Board of Neurological Surgery (ABNS), or specialty qualifications that are acceptable to the Review Committee; and,

II.A.3.c) current medical licensure and appropriate medical staff appointment.

II.A.4. The program director must administer and maintain an educational environment conducive to educating the residents in each of the ACGME competency areas.

The program director must:

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

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

II.A.4.b).(1) The site director must be an ABNS-certified neurological surgeon appointed by and responsible to the program director.

II.A.4.b).(2) Each site director must have major clinical responsibilities at that site.

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

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

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

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

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

II.A.4.h) ensure compliance with grievance and due process procedures as set forth in the Institutional Requirements and implemented by the sponsoring institution; (Detail)

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

II.A.4.j) implement policies and procedures consistent with the institutional and program requirements for resident duty hours and the working environment, including moonlighting; (Core)

and, to that end, must:

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

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

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

II.A.4.j).(4) if applicable, monitor the demands of at-home call and adjust schedules as necessary to mitigate excessive service demands and/or fatigue. (Detail)

II.A.4.k) monitor the need for and ensure the provision of back up support systems when patient care responsibilities are unusually difficult or prolonged; (Detail)

II.A.4.l) comply with the sponsoring institution’s written policies and procedures, including those specified in the Institutional
Requirements, for selection, evaluation and promotion of residents, disciplinary action, and supervision of residents; (Detail)

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

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

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

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

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

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

II.A.4.n).(5) requests for increases or any change to resident duty hours; (Detail)

II.A.4.n).(6) voluntary withdrawals of ACGME-accredited programs; (Detail)

II.A.4.n).(7) requests for appeal of an adverse action; and, (Detail)

II.A.4.n).(8) appeal presentations to a Board of Appeal or the ACGME. (Detail)

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

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

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

II.A.4.p) develop and implement a supervision policy that specifies resident and faculty member lines of responsibility. (Core)

II.B. Faculty

II.B.1. At each participating site, there must be a sufficient number of faculty with documented qualifications to instruct and supervise all

Neurological Surgery 5
residents at that location. (Core)

The faculty must:

II.B.1.a) devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities; and to demonstrate a strong interest in the education of residents, and (Core)

II.B.1.b) administer and maintain an educational environment conducive to educating residents in each of the ACGME competency areas. (Core)

II.B.2. The physician faculty must have current certification in the specialty by the American Board of Neurological Surgery, or possess qualifications judged acceptable to the Review Committee. (Core)

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

II.B.4. The nonphysician faculty must have appropriate qualifications in their field and hold appropriate institutional appointments. (Core)

II.B.5. The faculty must establish and maintain an environment of inquiry and scholarship with an active research component. (Core)

II.B.5.a) The faculty must regularly participate in organized clinical discussions, rounds, journal clubs, and conferences. (Detail)

II.B.5.b) Some members of the faculty should also demonstrate scholarship by one or more of the following:

II.B.5.b).(1) peer-reviewed funding; (Detail)

II.B.5.b).(2) publication of original research or review articles in peer-reviewed journals, or chapters in textbooks; (Detail)

II.B.5.b).(3) publication or presentation of case reports or clinical series at local, regional, or national professional and scientific society meetings; or, (Detail)

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

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

II.B.6. There must be a minimum of three full-time clinically active neurological surgeons on the faculty and located at the primary clinical site. (Core)

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

II.C.1. There must be a designated program coordinator with financial support from the sponsoring institution. (Core)

II.D. Resources

The institution and the program must jointly ensure the availability of adequate resources for resident education, as defined in the specialty program requirements. (Core)

II.D.1. Inpatient facilities must be available and should include: (Core)

II.D.1.a) a neurological surgery operating room with microsurgical capabilities; (Detail)

II.D.1.b) an intensive care unit specifically for the care of neurological surgery patients; (Detail)

II.D.1.c) a neuroangiography suite with extracranial and intracranial interventional capabilities; (Detail)

II.D.1.d) access to a stereotactic radiosurgery facility; and, (Detail)

II.D.1.e) a unit designated for the care of neurological surgery patients. (Detail)

II.D.2. There must be outpatient facilities, and clinic and office space for educating residents in the regular pre-operative evaluation and post-operative follow-up for cases for which residents have responsibility. (Core)

II.D.3. There must be space and support personnel for research. (Detail)

II.D.4. There should be clinical services available for the education of residents in anesthesiology, critical care, emergency medicine, endocrinology, ophthalmology, orthopaedics, otolaryngology, pathology, and psychiatry. (Detail)

II.D.5. There should be cases distributed among cranial, extracranial, spinal, peripheral nerve, and endovascular surgical procedures to include all of those areas related to required outcomes for patient care and medical knowledge. (Core)

II.D.5.a) There should be a total of at least 500 major neurological surgery procedures per year for each resident completing the program. (Core)

II.D.5.b) Each hospital participating in the program should have at least
100 major neurological surgery procedures per year distributed appropriately among the spectrum of cases. (Core)

II.E. Medical Information Access

Residents must have ready access to specialty-specific and other appropriate reference material in print or electronic format. Electronic medical literature databases with search capabilities should be available. (Detail)

III. Resident Appointments

III.A. Eligibility Criteria

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

III.A.1. Prior to appointment in the program, each resident must be notified in writing of the required length of the program. (Detail)

III.A.2. The length of education for each resident must not exceed the required length of the program except for approved medical leaves or required remediation. (Detail)

III.B. Number of Residents

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

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

III.C. Resident Transfers

III.C.1. Before accepting a resident who is transferring from another program, the program director must obtain written or electronic verification of previous educational experiences and a summative competency-based performance evaluation of the transferring resident. (Detail)

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

III.D. Appointment of Fellows and Other Learners

The presence of other learners (including, but not limited to, residents from other specialties, subspecialty fellows, PhD students, and nurse practitioners) in the program must not interfere with the appointed residents’ education. (Core)
III.D.1. The program director must report the presence of other learners to the DIO and GMEC in accordance with sponsoring institution guidelines. (Detail)

III.D.2. Programs must notify the Review Committee when they sponsor or participate in any clinical fellowship taking place within sites participating in the program. (Core)

III.D.2.a) Notification must occur before the commencement of such education. (Detail)

III.D.2.b) Documentation must be provided describing the fellowship’s relationship to and impact on the residency. (Detail)

IV. Educational Program

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

IV.A.1. Overall educational goals for the program, which the program must make available to residents and faculty; (Core)

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

IV.A.3. Regularly scheduled didactic sessions; (Core)

IV.A.3.a) Didactic sessions must include teaching conferences, rounds, and other educational activities in which both the neurological surgery faculty members and residents participate. (Core)

IV.A.3.a).(1) A majority of faculty members and residents must attend these sessions. (Detail)

IV.A.3.a).(2) A conference attendance record for both residents and faculty members must be maintained. (Detail)

IV.A.3.b) Topics should include: basic sciences, neuropathology, radiation oncology and basic physics as it relates to tumors of the central nervous system and the late effects of radiation on the central nervous system, and neuroradiology, as well as topics related to all required patient care and medical knowledge outcomes. (Core)

IV.A.3.b).(1) Additional topics should be agreed upon by individual residents and the program director. (Detail)

IV.A.4. Delineation of resident responsibilities for patient care, progressive responsibility for patient management, and supervision of residents over the continuum of the program; and, (Core)
IV.A.5. ACGME Competencies

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

IV.A.5.a) Patient Care and Procedural Skills

IV.A.5.a).(1) Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. (Outcome)

IV.A.5.a).(2) Residents must be able to competently perform all medical, diagnostic, and surgical procedures considered essential for the area of practice. Residents: (Outcome)

must demonstrate competence in:

IV.A.5.a).(2).(a) gathering essential patient information in a timely manner; (Outcome)

IV.A.5.a).(2).(b) synthesizing and properly utilizing acquired patient data; (Outcome)

IV.A.5.a).(2).(c) generating a differential diagnosis and properly sequencing critical actions for patient care, including managing complications and morbidity and mortality; (Outcome)

IV.A.5.a).(2).(d) generating and implementing an effective management plan; (Outcome)

IV.A.5.a).(2).(e) prioritizing and stabilizing multiple patients simultaneously; (Outcome)

IV.A.5.a).(2).(f) performing neurosurgical operative procedures, including: (Outcome)

IV.A.5.a).(2).(f).(i) adult cranial procedures, to include: (Outcome)

IV.A.5.a).(2).(f).(i).(a) craniotomy for brain tumors; (Outcome)

IV.A.5.a).(2).(f).(i).(b) craniotomy for intracranial vascular lesions; (Outcome)

IV.A.5.a).(2).(f).(i).(c) craniotomy for pain; (Outcome)

IV.A.5.a).(2).(f).(i).(d) craniotomy for trauma; (Outcome)
IV.A.5.a).(2).(f).(i).(e) endovascular/interventional procedures for intracranial cerebrovascular and neurooncologic conditions; (Outcome)

IV.A.5.a).(2).(f).(i).(f) extracranial vascular procedures (open surgery and endovascular); (Outcome)

IV.A.5.a).(2).(f).(i).(g) functional procedures; (Outcome)

IV.A.5.a).(2).(f).(i).(h) radiosurgery; (Outcome)

IV.A.5.a).(2).(f).(i).(i) transsphenoidal sellar/parasellar tumors (endoscopic and microsurgical); and, (Outcome)

IV.A.5.a).(2).(f).(i).(j) ventriculoperitoneal (VP) shunt. (Outcome)

IV.A.5.a).(2).(f).(ii) adult spinal procedures, to include: (Outcome)

IV.A.5.a).(2).(f).(ii).(a) anterior cervical approaches for decompression/stabilization; (Outcome)

IV.A.5.a).(2).(f).(ii).(b) posterior cervical approaches for decompression/stabilization; (Outcome)

IV.A.5.a).(2).(f).(ii).(c) interventional procedures for spinal conditions; (Outcome)

IV.A.5.a).(2).(f).(ii).(d) lumbar discectomy; (Outcome)

IV.A.5.a).(2).(f).(ii).(e) peripheral nerve procedures; and, (Outcome)

IV.A.5.a).(2).(f).(ii).(f) thoracic/lumbar instrumentation fusion. (Outcome)

IV.A.5.a).(2).(f).(iii) pediatric procedures, to include: (Outcome)

IV.A.5.a).(2).(f).(iii).(a) craniotomy for brain tumor; (Outcome)

IV.A.5.a).(2).(f).(iii).(b) spinal procedures, including Chiari decompressions, laminectomy for dysraphism, laminectomy for spinal tumors, laminectomy for syringomyelia, and correction of spinal deformity; and, (Outcome)

IV.A.5.a).(2).(f).(iii).(c) VP shunt. (Outcome)
IV.A.5.a).(2).(f).(iv) craniotomy for epilepsy for adult and pediatric patients.

IV.A.5.a).(2).(g) assessing postoperative recovery, recognizing and treating complications, communicating with referring physicians, and developing the physician-patient relationship.

IV.A.5.a).(2).(h) analyzing patient outcomes; and,

IV.A.5.a).(2).(i) providing health care services aimed at preventing health problems and maintaining health.

IV.A.5.b) Medical Knowledge

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents must demonstrate competence in their knowledge of:

IV.A.5.b).(1) neurosurgical emergencies;

IV.A.5.b).(2) treating neurosurgical conditions, including:

IV.A.5.b).(2).(a) cerebrovascular disorders;

IV.A.5.b).(2).(b) functional neurosurgery;

IV.A.5.b).(2).(c) neurocritical care;

IV.A.5.b).(2).(d) neurooncology;

IV.A.5.b).(2).(e) pain;

IV.A.5.b).(2).(f) pediatric neurological surgery;

IV.A.5.b).(2).(g) peripheral nerve disorders;

IV.A.5.b).(2).(h) spinal disorders; and,

IV.A.5.b).(2).(i) trauma.

IV.A.5.b).(3) different medical practice models and delivery systems and how to best utilize them to care for an individual patient;

IV.A.5.b).(4) study design and statistical methods.
IV.A.5.c) Practice-based Learning and Improvement

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

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

IV.A.5.c).(1) identify strengths, deficiencies, and limits in one’s knowledge and expertise; (Outcome)

IV.A.5.c).(2) set learning and improvement goals; (Outcome)

IV.A.5.c).(3) identify and perform appropriate learning activities; (Outcome)

IV.A.5.c).(4) systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement; (Outcome)

IV.A.5.c).(5) incorporate formative evaluation feedback into daily practice; (Outcome)

IV.A.5.c).(6) locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems; (Outcome)

IV.A.5.c).(7) use information technology to optimize learning; (Outcome)

IV.A.5.c).(8) participate in the education of patients, families, students, residents, and other health professionals; and, (Outcome)

IV.A.5.c).(8).(a) This experience should include the education of undergraduate medical students. (Detail)

IV.A.5.c).(9) incorporate evidence-based principles in their clinical practice. (Outcome)

IV.A.5.d) Interpersonal and Communication Skills

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

Residents are expected to:
IV.A.5.d).(1) communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds; (Outcome)

IV.A.5.d).(2) communicate effectively with physicians, other health professionals, and health related agencies; (Outcome)

IV.A.5.d).(3) work effectively as a member or leader of a health care team or other professional group; (Outcome)

IV.A.5.d).(4) act in a consultative role to other physicians and health professionals; (Outcome)

IV.A.5.d).(5) maintain comprehensive, timely, and legible medical records, if applicable; (Outcome)

IV.A.5.d).(6) demonstrate effective listening and non-verbal communication skills. (Outcome)

IV.A.5.d).(7) demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences; (Outcome)

IV.A.5.d).(8) demonstrate effective written communication skills; and, (Outcome)

IV.A.5.d).(9) involve patients in medical decisions. (Outcome)

IV.A.5.e) Professionalism

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

Residents are expected to demonstrate:

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

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

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

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

IV.A.5.e).(5) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and
IV.A.5.e).(6) sensitivity to their patients’ pain and emotional states; and,

IV.A.5.e).(7) the ability to discuss death honestly, sensitively, patiently, and compassionately. (Outcome)

IV.A.5.f) Systems-based Practice

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

Residents are expected to:

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

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

IV.A.5.f).(3) incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate; (Outcome)

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

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

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

IV.A.5.f).(7) access, appropriately utilize, and evaluate the effectiveness of the resources, providers, and systems necessary to provide optimal neurosurgical care. (Outcome)

IV.A.6. Curriculum Organization and Resident Experiences

IV.A.6.a) The year of fundamental skills (PGY-1) must be organized so that residents participate in clinical and didactic activities to: (Core)

IV.A.6.a).(1) develop the knowledge, attitudes, and skills needed to formulate principles and assess, plan, and initiate treatment of patients with surgical and medical problems; (Outcome)
IV.A.6.a).(2) be involved in the care of patients with surgical and medical emergencies, multiple organ system trauma, and nervous system injuries and diseases; (Detail)

IV.A.6.a).(3) gain experience in the care of critically-ill surgical and medical patients; (Detail)

IV.A.6.a).(4) participate in the pre-, intra-, and post-operative care of surgical patients; and, (Detail)

IV.A.6.a).(5) develop basic surgical skills and an understanding of surgical anesthesia, including anesthetic risks and the management of intra-operative anesthetic complications. (Outcome)

IV.A.6.b) The program must provide 54 months of clinical neurological surgery education at the primary clinical site or at an approved participating site. A minimum of 21 months of neurological surgery education must occur at the primary clinical site. (Core)

IV.A.6.b).(1) This must include a minimum of six months of structured education in general patient care and minimum of 42 months of operative neurological surgery. (Core)

IV.A.6.b).(2) During the first 18 months of education residents must have at least three months of basic clinical neuroscience education and at least three months of critical care education applicable to the neurosurgical patient. (Core)

IV.A.6.b).(3) Residents must spend a 12-month period of time as chief resident on the neurological surgery clinical service at the primary clinical site or at an approved participating site. (Core)

IV.A.6.b).(3).(a) The chief resident must have major or primary responsibility for patient management with faculty member supervision. (Detail)

IV.A.6.b).(3).(b) The chief resident should have administrative responsibility as designated by the program director. (Detail)

IV.A.6.b).(3).(c) The specific portion of the clinical education that constitutes the 12 months of chief residency must be specifically designated as the chief residency experience. (Detail)

IV.A.6.c) The remaining months of the program must be used for elective clinical education and/or research. (Core)
IV.A.6.d) Resident experiences must include:

IV.A.6.d).(1) participating in the management (including critical care) and surgical care of adult and pediatric patients, which should include the full spectrum of neurosurgical disorders; (Core)

IV.A.6.d).(2) evaluating patients referred for elective surgery in an outpatient environment; (Core)

IV.A.6.d).(2).(a) This experience should include obtaining a complete history, conducting an examination, ordering (if necessary) and interpreting diagnostic studies, and arriving independently at a diagnosis and plan of management. (Detail)

IV.A.6.d).(3) making pre-operative decisions and participating in procedures, including surgical, endovascular, interventional, and radiological procedures; (Core)

IV.A.6.d).(3).(a) Each resident must record, in the ACGME Case Log System, the number and type of each procedure he or she performs as either assistant resident surgeon, senior resident surgeon, or lead resident surgeon. (Core)

IV.A.6.d).(3).(b) Resident participation in and responsibility for procedures should increase progressively throughout residency. (Detail)

IV.A.6.d).(4) post-surgical care and follow-up evaluation of patients; and, (Core)

IV.A.6.d).(5) clinical experience in neuroradiology, including endovascular surgical neuroradiology, and neuropathology designed specifically for neurological surgery residents. (Core)

IV.A.6.d).(5).(a) Such experience should take place under the direction of qualified neuroradiologists and preferably endovascular neurosurgeons, and neuropathologists. (Detail)

IV.B. Residents’ Scholarly Activities

IV.B.1. The curriculum must advance residents’ knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care. (Core)

IV.B.2. Residents should participate in scholarly activity. (Core)
IV.B.2.a) Residents must participate in the development of new knowledge, learn to evaluate research findings, and develop habits of inquiry as a continuing professional responsibility. (Core)

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

V. Evaluation

V.A. Resident Evaluation

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

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

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

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

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

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

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

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

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

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

V.A.2. Formative Evaluation
V.A.2.a) The faculty must evaluate resident performance in a timely manner during each rotation or similar educational assignment, and document this evaluation at completion of the assignment. (Core)

V.A.2.b) The program must:

V.A.2.b).(1) provide objective assessments of competence in patient care and procedural skills, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice based on the specialty-specific Milestones; (Core)

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

V.A.2.b).(3) document progressive resident performance improvement appropriate to educational level; and, (Core)

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

V.A.2.c) The evaluations of resident performance must be accessible for review by the resident, in accordance with institutional policy. (Detail)

V.A.2.d) At least semiannually, the program director must review the ACGME case log data with each resident to ensure the balanced progress of each resident towards achieving experience with a variety and complexity of neurological surgery procedures. (Core)

V.A.3. Summative Evaluation

V.A.3.a) The specialty-specific Milestones must be used as one of the tools to ensure residents are able to practice core professional activities without supervision upon completion of the program. (Core)

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

This evaluation must:

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

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

V.B. Faculty Evaluation

V.B.1. At least annually, the program must evaluate faculty performance as it relates to the educational program.

V.B.2. These evaluations should include a review of the faculty’s clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism, and scholarly activities.

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

V.C. Program Evaluation and Improvement

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

V.C.1.a) The Program Evaluation Committee:

V.C.1.a).(1) must be composed of at least two program faculty members and should include at least one resident;

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

V.C.1.a).(3) should participate actively in:

V.C.1.a).(3).a) planning, developing, implementing, and evaluating educational activities of the program;

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

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

V.C.1.a).(3).d) reviewing the program annually using evaluations of faculty, residents, and others, as specified below.

V.C.2. The program, through the PEC, must document formal, systematic
evaluation of the curriculum at least annually, and is responsible for rendering a written, annual program evaluation. (Core)

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

V.C.2.a) resident performance; (Core)

V.C.2.b) faculty development; (Core)

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

V.C.2.d) program quality; and, (Core)

V.C.2.d).(1) Residents and faculty must have the opportunity to evaluate the program confidentially and in writing at least annually, and (Detail)

V.C.2.d).(2) The program must use the results of residents’ and faculty members’ assessments of the program together with other program evaluation results to improve the program. (Detail)

V.C.2.e) progress on the previous year’s action plan(s). (Core)

V.C.3. The PEC must prepare a written plan of action to document initiatives to improve performance in one or more of the areas listed in section V.C.2., as well as delineate how they will be measured and monitored. (Core)

V.C.3.a) The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes. (Detail)

V.C.4. All residents must pass the ABNS primary examination before completing the program. (Outcome)

V.C.5. At least 85% of a program’s residents taking the ABNS certifying written examination for credit for the first time during the past seven years must pass. (Outcome)

V.C.6. At least 80% of a program’s graduates taking the ABNS certifying oral examination for the first time during the past seven years must pass. (Outcome)

V.C.6.a) If fewer than 10 program graduates have taken the oral exam in the past seven years, then at least 80% of the last ten program graduates taking the oral exam for the first time must pass. (Outcome)

VI. Resident Duty Hours in the Learning and Working Environment

VI.A. Professionalism, Personal Responsibility, and Patient Safety
VI.A.1. Programs and sponsoring institutions must educate residents and faculty members concerning the professional responsibilities of physicians to appear for duty appropriately rested and fit to provide the services required by their patients. (Core)

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

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

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

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

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

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

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

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

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

VI.A.6.c) assurance of their fitness for duty; (Outcome)

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

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

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

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

VI.A.6.h) honest and accurate reporting of duty hours, patient outcomes, and clinical experience data. (Outcome)
VI.A.7. All residents and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. They must recognize that under certain circumstances, the best interests of the patient may be served by transitioning that patient's care to another qualified and rested provider. (Outcome)

VI.B. Transitions of Care

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

VI.B.2. Sponsoring institutions and programs must ensure and monitor effective, structured hand-over processes to facilitate both continuity of care and patient safety. (Core)

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

VI.B.4. The sponsoring institution must ensure the availability of schedules that inform all members of the health care team of attending physicians and residents currently responsible for each patient’s care. (Detail)

VI.C. Alertness Management/Fatigue Mitigation

VI.C.1. The program must:

VI.C.1.a) educate all faculty members and residents to recognize the signs of fatigue and sleep deprivation; (Core)

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

VI.C.1.c) adopt fatigue mitigation processes to manage the potential negative effects of fatigue on patient care and learning, such as naps or back-up call schedules. (Detail)

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

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

VI.D. Supervision of Residents

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

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

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

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

Supervision may be exercised through a variety of methods. Some activities require the physical presence of the supervising faculty member. For many aspects of patient care, the supervising physician may be a more advanced resident or fellow. Other portions of care provided by the resident can be adequately supervised by the immediate availability of the supervising faculty member or resident physician, either in the institution, or by means of telephonic and/or electronic modalities. In some circumstances, supervision may include post-hoc review of resident-delivered care with feedback as to the appropriateness of that care. (Detail)

VI.D.3. Levels of Supervision

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

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

VI.D.3.b) Indirect Supervision:

VI.D.3.b).(1) with direct supervision immediately available – the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide Direct Supervision. (Core)

VI.D.3.b).(2) with direct supervision available – the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide Direct Supervision. (Core)

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

VI.D.4. The privilege of progressive authority and responsibility, conditional
independence, and a supervisory role in patient care delegated to each resident must be assigned by the program director and faculty members. (Core)

VI.D.4.a) The program director must evaluate each resident’s abilities based on specific criteria. When available, evaluation should be guided by specific national standards-based criteria. (Core)

VI.D.4.b) Faculty members functioning as supervising physicians should delegate portions of care to residents, based on the needs of the patient and the skills of the residents. (Detail)

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

VI.D.5. Programs must set guidelines for circumstances and events in which residents must communicate with appropriate supervising faculty members, such as the transfer of a patient to an intensive care unit, or end-of-life decisions. (Core)

VI.D.5.a) Each resident must know the limits of his/her scope of authority, and the circumstances under which he/she is permitted to act with conditional independence. (Outcome)

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

VI.D.6. Faculty supervision assignments should be of sufficient duration to assess the knowledge and skills of each resident and delegate to him/her the appropriate level of patient care authority and responsibility. (Detail)

VI.E. Clinical Responsibilities

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

VI.E.1. Neurological surgery residents must practice across a diversity of care settings with varying degrees of primary patient responsibility. These situations vary from first call cross-coverage on the floors to possible interaction with a primary intensivist, pediatric, or hospitalist service. (Detail)

VI.E.2. Peri-operative inpatient care must be further balanced with resident participation in the operating room. Program directors must consider the following when assigning patient loads: (Detail)

VI.E.2.a) adequate coverage and provision of patient care; (Detail)
VI.E.2.b) sufficient inpatient clinical responsibility to allow resident progression along clinical care milestones; and, *(Detail)*

VI.E.2.c) meaningful insulation of operative experiences from inpatient care to allow technical progress and facilitate resident development of organizational and triage skills. *(Detail)*

VI.F. Teamwork

Residents must care for patients in an environment that maximizes effective communication. This must include the opportunity to work as a member of effective interprofessional teams that are appropriate to the delivery of care in the specialty. *(Core)*

VI.G. Resident Duty Hours

VI.G.1. Maximum Hours of Work per Week

Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities and all moonlighting. *(Core)*

VI.G.1.a) Duty Hour Exceptions

A Review Committee may grant exceptions for up to 10% or a maximum of 88 hours to individual programs based on a sound educational rationale. *(Detail)*

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

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

VI.G.2. Moonlighting

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

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

VI.G.2.c) PGY-1 residents are not permitted to moonlight. *(Core)*
VI.G.3. Mandatory Time Free of Duty

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

VI.G.4. Maximum Duty Period Length

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

VI.G.4.b) Duty periods of PGY-2 residents and above may be scheduled to a maximum of 24 hours of continuous duty in the hospital. (Core)

VI.G.4.b).(1) Programs must encourage residents to use alertness management strategies in the context of patient care responsibilities. Strategic napping, especially after 16 hours of continuous duty and between the hours of 10:00 p.m. and 8:00 a.m., is strongly suggested. (Detail)

VI.G.4.b).(2) It is essential for patient safety and resident education that effective transitions in care occur. Residents may be allowed to remain on-site in order to accomplish these tasks; however, this period of time must be no longer than an additional four hours. (Core)

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

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

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

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

VI.G.4.b).(4).(a).(ii) document the reasons for remaining to care for the patient in question and submit that documentation in every circumstance to the program director. (Detail)
The program director must review each submission of additional service, and track both individual resident and program-wide episodes of additional duty.

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

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

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

PGY-2 residents are considered to be at the intermediate level.

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

Residents at the PGY-3 level and beyond are considered to be in the final years of education.

**VI.G.5.c).(1)**

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

**VI.G.5.c).(1).(a)**

Circumstances of return-to-hospital activities with fewer than eight hours away from the hospital by residents in their final years of education must be monitored by the program director.

**VI.G.5.c).(1).(b)**

Residents at the PGY-3 level and beyond may stay on duty or return to the hospital with fewer than eight hours free of duty under specific circumstances.

**VI.G.5.c).(1).(c)**

The Review Committee defines such circumstances as: required continuity of care for a severely ill or unstable patient, or a complex patient with whom the resident has been involved; events of exceptional educational value; or, humanistic
attention to the needs of a patient or family.

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

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

VI.G.6.a) Night float should be limited to four months per year, and must not exceed six months per year. (Detail)

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

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

VI.G.8. At-Home Call

VI.G.8.a) Time spent in the hospital by residents on at-home call must count towards the 80-hour maximum weekly hour limit. The frequency of at-home call is not subject to the every-third-night limitation, but must satisfy the requirement for one-day-in-seven free of duty, when averaged over four weeks. (Core)

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

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

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

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

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

Osteopathic Principles Recognition

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