ACGME Program Requirements for Graduate Medical Education in Neurological Surgery
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INTRODUCTION
The purpose of this Residency Handbook is to provide both residents and faculty members with a summary of the learning objectives for the Program in Neurological Surgery at The University of Texas Medical Branch at Galveston. This program has a long history of excellence in didactic, clinical and research contributions to the field of Neurological Surgery and has trained a superb group of neurological surgeons who are practicing successfully in private practice and academic positions throughout Texas and the United States.

It is a living document, changing with the constantly changing field of Neurological Surgery, as well as the changing needs for resident education.

The reason for being of the Division of Neurosurgery at UTMB is education of residents and students, combined with a dedication to the highest quality healthcare for our patients, as well as a commitment to furthering research in the field of Neurosurgery. These three missions are inextricably linked and each enhances the other. Our strategic goals for the Division of Neurosurgery are one and the same with The University of Texas Medical Branch Mission and Vision.

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)

**UTMB MISSION AND VISION STATEMENTS**

**Mission Statement**

The mission of The University of Texas Medical Branch at Galveston is to provide scholarly teaching, innovative scientific investigation, and state-of-the-art patient care in a humane, learning environment.

UTMB is unique among the health science centers in the state of Texas in that its academic, clinical, and research programs and facilities operate under a single administration. This integration of education, patient care, and scientific investigation provides consistency in goal setting and administrative support for UTMB’s commitment to excellence and ethical integrity in all aspects of its mission.

UTMB’s outstanding programs in professional education enable the state’s most talented individuals to become practitioners, teachers, and investigators in the health care sciences, thereby meeting the needs of the people of Texas and its national and international neighbors. The finest training in specialty and subspecialty care, for which UTMB hospitals are known, is made available to students and graduate clinicians. UTMB recruits and supports the career goals of students and faculty from disadvantaged groups.

An integral part of UTMB’s mission is to care for patients. UTMB is committed to serving the community through the discovery and application of new approaches to preventing, diagnosing, and treating disease. This commitment is expressed through the full spectrum of patient care services provided by UTMB’s Hospitals and Clinics. State-of-the-art clinical programs supported by the latest technological advances position UTMB to serve the state’s diverse health care needs. The comprehensive clinical programs in primary, specialty, and subspecialty care provided by UTMB help support its teaching and research activities, which, in turn, support further advances in clinical care for patients.

With quality research programs devoted to the discovery and dissemination of scientific knowledge and the development of further investigators, UTMB continues to build one of the nation’s outstanding academic health science centers. In addition to basic scientific and clinical investigations, research on health policy and health care outcomes and study in the medical humanities form an integral part of this endeavor. The ultimate goal of all research endeavors at UTMB is the development of more effective health care programs for Texas and the nation.
Vision Statement
UTMB strives to set a standard for leadership and excellence in health science education, research, patient care, and service, and for the integration of these missions in a health care institution. UTMB strives to keep its programs in the top ten percent of comparable programs nationally. The UTMB family functions as a seamless community of health professionals, takes pride in its accomplishments, shares its learning’s, and leverages its future on its successes. UTMB demonstrates its stewardship by being true to its mission, eliminating those programs in which excellence cannot be achieved, and by not attempting programs that are inconsistent with its mission and vision.

Education
UTMB strives to make its health science education programs national models for the education and training of health care professionals and biomedical scientists to serve both the basis and specialized health care needs of the people of Texas. Training for primary care, both on and off-campus, and commitment to diversity in the health care workplace through the recruitment of students and faculty from disadvantaged groups are emphasized. Problem-based, interdisciplinary, student-centered learning is the basis for its undergraduate, graduate, and continuing education programs. The success of these and other academic programs at UTMB is recognized internationally.

UTMB strives to keep its health care delivery system among the nation’s leaders in providing health care services and products that are the most affordable, easiest to access, and responsive, with the highest service standards and highest quality of care. The patient’s overall experience in UTMB’s Hospitals and Clinics and the quality of the medical outcomes are recognized as superior in the health care environment. Emphasis is placed on improved access to the life-long continuum of care from primary through quaternary care and access to relevant health care technology and information. These improvements in access will focus on UTMB’s statewide patient care service area. The health care work force at UTMB is noted for its effectiveness, conscientious and compassionate manner, and desire for excellence in all endeavors.

Research
UTMB strives to be among the nation’s pre-eminent research institutions, attracting and developing scientific investigations and scholarly programs of international importance, and contributing thereby to the solution of fundamental and universal health care problems. Through the discovery and dissemination of biomedical knowledge, these research programs position UTMB to influence beneficially health care outcomes, disease prevention, and health policy for diverse populations. Its quality research programs also support an unsurpassed level of clinical care and optimal educational opportunities for the people of Texas. New ideas and products based on UTMB’s research form the bases for the creation of technological and biomedical businesses.

Service
UTMB strives to be a model for how an academic health center can add value to the communities populated and served by its faculty, staff and students. Cooperative agreements with city, county, local and state governments underlie effective provision of a variety of community health care services. UTMB disseminates knowledge and understanding to the citizenry through innovative educational and community service efforts. In their private and professional lives, UTMB students, faculty, and employees work with and within their local, state, and national communities to realize a shared vision of good health for all.
UTMB PHILOSOPHY

In fulfilling its mission, The University of Texas Medical Branch at Galveston is guided by a fundamental set of core values that we passionately embrace.

Service: We are committed to serve the health needs of all Texans, regardless of their ability to pay.

Diversity: We are committed to employ and to educate a health care work force whose diversity mirrors the population we serve.

Innovation: We are committed to think of new ways to do things better.

Community: We are committed to making our community a better place to live and work.

Education: We are committed to provide life-long learning for our students, staff, faculty and community.

These values are enduring. They define the behaviors of the institution. UTMB adheres to the highest standards of ethics, intellectual integrity, professional practice, efficiency, and accountability. The institution conducts its educational, research, clinical, and public service activities on behalf of all Texas and the nation. UTMB holds as a public trust the education and training of primary care and specialist health care practitioners; the investigation of biomedical mechanisms governing health, disease, and healing; the delivery of health care to the people of Texas; and the dissemination of information that will enable individuals and communities to preserve optimum health and deal constructively with disease and disability. UTMB dedicates itself to ensuring diversity in the health care workplace, providing currently disadvantaged groups in the health care professions with education, training, and opportunities for employment and advancement. UTMB strives to bring top-quality health care to rural and urban areas of Texas suffering from shortages of medical practitioners and facilities. UTMB is committed to making the most effective use of its resources, leveraging them through innovation, and constantly looking for new ways to improve efficiency and effectiveness. The University pledges itself to be a participating partner with the community to make it a better place to live and work.

Operating its own teaching hospitals enables UTMB to create conditions that encourage collaboration among educators, researchers and clinicians as they develop and employ innovative prevention, treatment, and rehabilitation techniques to serve the citizens of Texas and to educate future health care professionals for the state. UTMB has established goals that will strengthen its faculty, programs, staff, and infrastructure. Achieving these goals will position the Medical Branch to:

♦ provide the highest quality health and medical training available
♦ furnish state-of-the-art health and medical care to the people of Texas
♦ become a leader in broadening health and medical knowledge through research
♦ acquire increasing levels of extramural research support, patient care income, and philanthropic gifts to support future growth and development

To guide its actions into the future, The University of Texas Medical Branch at Galveston has established six unique, interdependent goals that take advantage of its existing strengths and its unique synergistic environment. UTMB is authorized by Article 7, Section 10 of Vernon’s Annotated Texas Constitution, which states, “The Legislature shall as soon as practicable establish, organize and provide
for the maintenance, support and direction of a University of the first class, to be located by a vote of the people of the State, and styled, ‘The University of Texas’….”

UTMB’s goals are as follows:

- Provide instruction that prepares students, residents and fellows in all four schools to meet the evolving health needs of all segments of our society while instilling in those students a commitment to a lifetime of learning, an understanding of and a dedication to the pursuit of scientific knowledge in the service of humankind, an appreciation of underlying human values and a sensitivity to cultural differences. UTMB will develop and implement plans and processes for training more primary care providers for Texas. Educational programs will be developed with collaboration from each of the schools and will focus on a team approach to health care delivery.

- Conduct research, both within the institution and in collaboration with other entities, that meets the highest standards of scientific inquiry as UTMB extends and evaluates knowledge relating to the cause, prevention and treatment of disease and to the promotion, restoration and maintenance of health and through these discoveries contribute to economic development in Texas. Emphasis will be placed on the development of a research infrastructure that both supports and drives the research agenda, and in collaboration with industry the development of additional funding sources through industrial relations and technology transfer opportunities. Multidisciplinary research will be promoted with an emphasis on development of significant interaction between clinical and basic science faculty.

- Provide public service, taking a leadership role in promoting health among the people of Texas, supporting health care practitioners by helping them update their skills and knowledge to meet evolving needs, and encouraging and helping prepare members of disadvantaged groups to enter health care professions.

- Provide health care that combines the latest biomedical knowledge and technological advances with the skill and wisdom of the finest practitioners of the healing arts and that serves as a model of appropriate, effective, accessible, compassionate and culturally sensitive treatment for and prevention of disease, injury and disability. Through partnership with community based providers, develop an integrated health care delivery system in coastal and east Texas in order to compete effectively in the evolving managed care environment.

- Provide institutional support and ancillary operations that will allow UTMB to conduct all aspects of its mission and pursue its vision in a manner that is fair to and supportive of all its employees, conducive to collegiality and creativity, positive in its social and economic impact on the community and the state, and efficient and effective.

- Maximize opportunities for historically underutilized businesses (HUBs), particularly those operating within the state of Texas.

Int.D. The educational program in neurological surgery must be 84 months in length. (Core)*
I. Institutions

I.A. Sponsoring Institution

One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to 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. (Detail)

The PLA should:

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

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

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

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

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

I.B.3. 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. (Detail)

II. Program Personnel and Resources

II.A. Program Director

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

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

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

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

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

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

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

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

The program director must:

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

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

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

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

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

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

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

II.A.4.f) monitor resident supervision at all participating sites; (Core)
II.A.4.g) prepare and submit all information required and requested by the ACGME.  
(Core)

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

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

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

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

   and, to that end, must:

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

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

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

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

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

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

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

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

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

II.A.4.n).(2) changes in resident complement;  
(Detail)
II.A.4.n). (3) major changes in program structure or length of training; 
II.A.4.n). (4) progress reports requested by the Review Committee; 
II.A.4.n). (5) responses to all proposed adverse actions; 
II.A.4.n). (6) requests for increases or any change to resident duty hours; 
II.A.4.n). (7) voluntary withdrawals of ACGME-accredited programs; 
II.A.4.n). (8) requests for appeal of an adverse action; 
II.A.4.n). (9) appeal presentations to a Board of Appeal or the ACGME; and, 
II.A.4.n). (10) proposals to ACGME for approval of innovative educational approaches.

II.A.4.o) obtain DIO review and co-signature on all program information forms, as well as any correspondence or document submitted to the ACGME that addresses:
II.A.4.o). (1) program citations, and/or 
II.A.4.o). (2) request for changes in the program that would have significant impact, including financial, on the program or institution.

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

II.B. Faculty

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

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

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.

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

II.B.4. The nonphysician faculty must have appropriate qualifications in their field and hold appropriate institutional appointments.
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, orthopedics, 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. Eligibility Requirements – Residency Programs

III.A.1.a) All prerequisite post-graduate clinical education required for initial entry or transfer into ACGME-accredited residency programs must be completed in ACGME-accredited residency programs, or in Royal College of Physicians and Surgeons of Canada (RCPSC)-accredited or College of Family Physicians of Canada (CFPC)-accredited residency programs located in Canada. Residency programs must receive verification of each applicant’s level of competency in the required clinical field using ACGME or CanMEDS Milestones assessments from the prior training program. (Core)

III.A.1.b) A physician who has completed a residency program that was not accredited by ACGME, RCPSC, or CFPC may enter an ADGME-accredited residency program in the same specialty at the PGY-1 level and, at the discretion of the program director at the ACGME-accredited program may be advanced to the PGY-2 level based on ACGME Milestones assessments at the ACGME-accredited program. This provision applies only
to entry into residency in those specialties for which an initial clinical year is not required for entry. *(Core)*

**III.A.1.c)** A Review Committee may grant the exception to the eligibility requirements specified in Section III.A.2.b) for residency programs that require completion of a prerequisite residency program prior to admission. *(Core)*

**III.A.1.d)** Review Committees will grant no other exceptions to these eligibility requirements for residency education. *(Core)*

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; \(\text{Core}\)

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. \(\text{Core}\)

IV.A.3. Regularly scheduled didactic sessions; \(\text{Core}\)

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. \(\text{Core}\)

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

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

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. \(\text{Core}\)

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

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, \(\text{Core}\)

IV.A.5. ACGME Competencies

The program must integrate the following ACGME competencies into the curriculum: \(\text{Core}\)

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

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

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 must demonstrate competence in:

IV.A.5.a).(2).(a) gathering essential patient information in a timely manner; \(\text{Outcome}\)
IV.A.5.a).(2).(b) synthesizing and properly utilizing acquired patient data; 

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; 

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

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

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

   adult cranial procedures, to include: 
   - craniotomy for brain tumors; 
   - craniotomy for intracranial vascular lesions; 
   - craniotomy for pain; 
   - craniotomy for trauma; 
   - endovascular/interventional procedures for intracranial cerebrovascular and neurooncologic conditions; 
   - extracranial vascular procedures (open surgery and endovascular); 
   - functional procedures; 
   - radiosurgery; 
   - transsphenoidal sellar/parasellar tumors (endoscopic and microsurgical); and, 
   - ventriculoperitoneal (VP) shunt. 

   adult spinal procedures, to include: 
   - anterior cervical approaches for decompression/stabilization; 
   - posterior cervical approaches for decompression/stabilization; 
   - interventional procedures for spinal conditions; 
   - lumbar discectomy; 
   - peripheral nerve procedures; and,
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. (Outcome)

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

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

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

IV.A.5.b) Medical Knowledge

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

must demonstrate competence in their knowledge of: (Outcome)

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

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

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

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

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

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

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

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

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

IV.A.5.b).(2).(h) spinal disorders; and, (Outcome)
IV.A.5.b).(2).(i) different medical practice models and delivery systems and how to best utilize them to care for an individual patient; and, (Outcome)

IV.A.5.b).(4) study design and statistical methods. (Outcome)

**IV.A.5.c) Practice-based Learning and Improvement**

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

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

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

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

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

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

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

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

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

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

IV.A.5.e)(6) sensitivity to their patients’ pain and emotional states; and, (Outcome)

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 neurological 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)
ACGME PROGRAM REQUIREMENTS FOR RESIDENCY EDUCATION IN NEUROLOGICAL SURGERY

PGY1 (Junior Level)

The year of fundamental skills (PGY1) must be organized so that residents participate in clinical and didactic activities to:

- develop the knowledge, attitudes and skills needed to formulate principles and assess, plan, and initiate treatment of patients with surgical and medical problems
- be involved in the care of patients with surgical and medical emergencies, multiple organ system trauma, and nervous system injuries and diseases;
- gain experience in the care of critically ill surgical and medical patients;
- participate in the pre-, intra-, and post-operative care of surgical patients; and
- develop basic surgical skills and an understanding of surgical anesthesia, including anesthetic risks and the management of intra-operative anesthetic complications.

This first year is designed to provide the trainee with a broad background in surgical principles and care of the surgical patient.

Residents should have a maximum of six months of this year is spent on the neurosurgery service as an integral member of the team.

Residents must have a minimum of six months of structured education in general patient care to include rotations in surgery, critical care, trauma, and other related rotations as determined by the program director. UTMB’s six months are spent as 1 month on trauma service, 3 months on vascular surgery, 1 month SICU and one month on Pediatric surgery. The 1 month on the trauma service serves to expose the resident to the multiply injured patient and the systems based practices required to co-manage these patients with other services. The vascular surgery rotation is to provide the resident with an experience in the diagnosis and treatment of intra- and extra- cranial disease with both open and endoscopic techniques.

During the first 18 months of education, residents must have a minimum of three months of Basic Neuroscience and three months of Critical Care relevant to the neurosurgical patient. During the neurosurgery rotation, the PGY1 becomes familiar with the hospital, focuses on neurosurgical assessment, and begins to participate in the daily care of inpatients and the emergency consultations. He/She also begins to participate in ICU procedures and emergency operations. The three month rotation on neurology focus on the neurological examination, recognition of both surgical and medical neurological conditions, differential diagnosis and the various diagnostic and electrophysiological tests used in neurological and neurosurgical practice. In addition, the resident will develop an understanding of the indications for and applications of a MRI, CT, myelography, angiography, EEG, and EMG/NCV in evaluation of patients with neurological diseases. The NCCU month/s exposes the resident to the management of critically ill patients.
medical and surgical patients and serves as an introduction to the bedside procedures used in the ICU setting.

On each of the clinical rotations, the PGY-1 resident has the opportunity to develop his/her interpersonal and communicative skills which maximize communication between members of the team, and with patients and family to allow them to participate positively in their own care. The clinical experience also affords the PGY-1 an opportunity to learn ward procedures including the placement of central and arterial lines. The educational experience of the PGY-1’s hands-on clinical training is augmented with case-based and basic science educational conferences. These educational conferences provide an opportunity for the resident and the Surgical Faculty to explore in greater detail the unique diagnostic, surgical treatment, and patient management issues required of those patients on their service. The resident is also encouraged to read and develop an approach to self-education to strengthen identify areas within his/her knowledge base. Typically, the PGY-1 resident will participate in all the neurosurgery teaching conferences when on neurology and neurosurgery, and on an optional basis throughout the year to the extent he/she is able when on the other rotations.

Programs must document that residents have had structured education in the procedures listed below equivalent to that available through the boot camps offered by the Society of Neurological Surgeons. Program directors must ensure that a resident has demonstrated competence in each listed procedure and patient management competency to the satisfaction of the supervising faculty member before he or she can be supervised indirectly with direct supervision available for that procedure or patient management competency.

Approved procedures and patient management competencies that PGY-1 residents can perform under indirect supervision with direct supervision immediately available are:

**Patient Management Competencies**

1. evaluation and management of a patient admitted to hospital, including initial history and physical examination, formulation of a plan of therapy, and necessary orders for therapy and tests
2. pre-operative evaluation and management, including history and physical examination, formulation of a plan of therapy, and specification of necessary tests
3. evaluation and management of post-operative patients, including the conduct of monitoring, specifying necessary test to be carried out, and preparing orders for medication, fluid therapy, and nutrition therapy
4. transfer of patients between hospital units or hospitals
5. discharge of patients from hospital
6. interpretation of laboratory results
Procedural Competencies

1. carry-out of basic venous access procedures, including establishing intravenous access
2. placement and removal of nasogastric tubes and Foley catheters
3. arterial puncture for blood gases
4. performance of lumbar puncture

During the early months of the PGY-1, residents must be educated in, directly observed, and assessed in the following:

Patient Management Competencies

1. initial evaluation and management of patients in the urgent or emergent situation, including urgent consultations, trauma, and emergency department consultations (ATLS required).
2. evaluation and management of post-operative complications, including hypotension, hypertension, oliguria, anuria, cardiac arrhythmias, hypoxemia, change in respiratory rate, change in neurologic status, and compartment syndromes
3. evaluation and management of critically-ill patients, either immediately post-operatively or in the intensive care unit, including monitoring, ventilator management, specification of necessary tests, and orders for medications, fluid therapy, and enteral/parenteral nutrition therapy
4. management of patients in cardiac arrest (ACLS required)

Procedural Competencies

1. Insertion of an intracranial pressure monitor
2. Insertion of a lumbar drain
3. Insertion of a ventriculostomy
4. carry-out of advanced vascular access procedures, including central venous catheterization, temporary dialysis access, and arterial cannulation
5. repair of surgical incisions of the skin and soft tissues
6. repair of skin and soft tissue lacerations
7. excision of lesions of the skin and subcutaneous tissues
8. tube thoracostomy
9. paracentesis
10. joint aspiration
11. advanced airway management
   a. Endotracheal intubation
   b. Tracheostomy
All residents enter the program as interns having participated in the Neurological Surgery Boot Camp offered through the Society of Neurological Surgeons. Boot camp provides intense training and assessment of fundamental professionalism, communication, and procedural skills, which are directly observed and evaluated during the early months of the PGY-1. By the time residents enter the PGY-2, they have had considerable experience as members of operative teams and in other teams providing patient care. Because neurological surgery programs are relatively small (one to three residents per PGY level), residents will assume continuously increasing progressive responsibilities. By the PGY-2, these residents are often the most senior residents on certain rotations (i.e., a pediatric service in a children’s hospital), and in such a role will function as a leader of the team with the attendings. Although neurological surgery programs are long, PGY-2 residents are as prepared to assume the responsibilities of an intermediate resident as are PGY-2 residents in shorter programs in primary care specialties, such as internal medicine or pediatrics. The additional years of neurological surgery education are needed to refine operative skills, not to develop advanced skills in the other competency domains.

In the “Intermediate Level” year, this second year of resident training begins the residents first year devoted entirely to neurosurgery training. As in the previous year, the supervised PGY-2 continues to focus on developing his/her interpersonal and communicative skills. In addition, the resident continues to develop his/her evaluation skills for history taking and the physical examination; diagnostic and emergency indications for MRI, CT, myelography, and angiography; the formulation of a most likely and differential diagnosis; and pre and post-operative management skills. This is accomplished by taking on more responsibility for the day-to-day ward duties and implementation of pre and postoperative treatment and/or investigation plans developed in close collaboration with the neurosurgery faculty and chief resident. In this capacity, the PGY-2 conducts the initial evaluation on the majority of the emergency consultations and under supervision develops an understanding of the indications for and the skills to perform ventriculostomies and placement of ICP monitors as needed in the emergency department and intensive care units. In addition, the resident develops an understanding of the theoretical basis for the practical and emergency management of increased intracranial pressure, patients with varying degrees of spinal cord injuries, and an understanding of when and how to apply skull tongs for cervical traction and reduction. The intermediate resident’s outpatient experience relates to post operative wound checks, suture removals, pre-operative histories and physicals done to ensure compliance with pre and postoperative care standards. They are also expected to assist attendings in the outpatient clinics, and to keep a record of their outpatient experience for their portfolio. Time remaining is spent assisting in the operating room.

These management skills are augmented with an ongoing orientation to the operating room and intra-operative patient management by assisting with a variety of neurosurgical cases and emergency procedures. With faculty supervision and assistance, the PGY-2 resident will be able to perform emergency burr holes or emergency craniotomy for trauma or intracranial hemorrhage. He/she will be expected to assist effectively in elective craniotomies and spinal procedures.
In addition to participating in the various educational conferences within the division, the resident is expected to read and develop an approach to self-education to strengthen identify areas within his/her knowledge base. The PGY-2 resident typically presents four cases for review and discussion at the weekly Neurology/Neurosurgery Grand Rounds. He/she also typically is involved with the production of one or two clinical articles.

**PGY-3 (Senior Level)** In this third year of training, the resident should expand their knowledge of cerebrovascular disease through a 3-month rotation with the Division of Vascular Surgery. This rotation affords the resident the opportunity to continue to refine his/her understanding of patient evaluation, diagnostic imaging and lab interpretation, peri-operative patient preparation and management of co-existing diabetic and/or anticoagulant therapy, intraoperative monitoring and response to ischemic detection, and postoperative management. Working closely with and supervised by the vascular faculty and the chief general surgery resident, the PGY-3 sharpens his/her history taking and physical examination skills. He/She sees vascular cases in the vascular clinic with the appropriate faculty. The resident expands his/her understanding of the theoretic bases of cerebral blood flow assessment, when it is appropriate to request specialized test including cerebral angiography, SPECT, and Doppler studies; and the application of evidence-based indications for surgery. The resident is expected to participate in approximately 15-20 carotid endarterectomy procedures, developing not only the surgical skill and understanding of the techniques required in carotid endarterectomies; but how to assess potential delayed failures as well as non-operative management. This rotation should also serve as an introduction to catheter techniques and angiography.

The remainder of the PGY-3 year is spent on the neurosurgery service where the resident is expected to continue to progress in their ability to independently evaluate and manage inpatients, but also to hone their skill at outpatient evaluation and management. They are expected to spend more time in the outpatient clinic and to keep track of the number of patients seen in their resident portfolio. Arrangements have also been made with our neuroradiologists for the PGY3 neurosurgery resident to participate in diagnostic and therapeutic catheter procedures in the angiography suite. This should afford the resident an opportunity for exposure to this exciting and rapidly expanding area of clinical neuroscience. In addition to participating in the various educational conferences within the division, the resident is expected to read and develop an approach to self-education to strengthen identify areas within his/her knowledge base.

**The PGY-3 resident works at UTMB, and participates in night float and weekend call in neurosurgery in rotation with other UTMB-based residents.**

**For those residents interested in pursuing a career in academic neurosurgery, or for those with a demonstrated interest in research, flexibility can be built into the PGY3 year to accommodate those interests and the opportunity to pursue a project in clinical or basic research will be provided.**
The PGY-3 resident is expected to pass the written examination of the ABNS taken “not-for-credit” before taking the exam for credit the following year. This is his/her intense study period for the written boards, and with that motivation in mind, this resident is assigned to “take ownership” of the weekly neurosurgery conference (each Wednesday at 10:00 AM). At the end of the PGY-2 year, the plan for the schedule of topics for the coming year is reviewed with the program director before approval by the faculty, and scrutinized for compliance with the curriculum outlined by the combined CNS/AANS committee on education. This study for the boards is a major part of this resident’s activities for the year.

The PGY-4, PGY-5, PGY-6 & PGY-7 (Senior Level) year for the 2016-2017 year will consist of 12 months at UTMB. The ultimate goal is for the resident to reach the point where they can independently evaluate and manage the pediatric neurosurgical patient with minimal faculty supervision.

The PGY-4, PGY-5, PGY-6 & PGY7 residents coordinate the function of the service as a whole. Up to this stage of training, the resident was focused on acquiring knowledge and skills under direct supervision. Through the course of this training year, the PGY-4, PGY-5, PGY-6 & PGY7 residents remain under the supervision of the faculty but increasingly is encouraged to function with greater independence in both the outpatient and inpatient consultation settings. With faculty support, the PGY4, PGY-5, PGY-6 & PGY7 residents become the principal communicator and coordinator for the TDCJ practice, where he/she spearheads both the outpatient and inpatient services. Continuing to refine his/her skills in history taking, conducting a physical examination, ordering appropriate diagnostic tests and imaging, evaluating, and managing a patient’s pre, intra and post-operative course; the resident is expected to diagnose correctly and develop appropriate treatment plans for most patients he/she sees. The resident’s operative skills are also expected to improve, so that, with minimal assistance from the faculty the resident is capable of performing most routine surgeries. These surgical procedures should include cervical and lumbar laminectomy for spinal degenerative disease, anterior cervical disectomy with fusion and corpectomy, craniotomy for simpler tumors and aneurysms, as well as routine peripheral nerve procedures. It is also expected that the PGY-4, PGY-5, PGY-6 & PGY7 residents will begin to recognize atypical or hazardous features of a case and formulate an appropriate response in anticipation. These residents also direct the morning and afternoon resident work rounds, sets the call schedule, takes the lead in coordinating the operating room, does the majority of most surgical cases under direction of the faculty. The residents also backs up the junior residents when they are on call in the evening. The residents share this responsibility one night in two with the individual in their instructor year. Faculty is always on call to help the chief resident, and faculty is expected to be present to supervise at key points of operative procedures.

The PGY-4, PGY-5, PGY-6 & PGY7 residents are responsible, either directly or via delegation, for the coordination of the TDC and John Sealy neurosurgery services, the coordination of M&M/case discussion conference, resident call schedule, ensuring resident compliance with duty hour restrictions, and other administrative responsibility as designated by the program director.

Residents must spend a 12-month period of time as chief resident on the neurological surgery clinical service in the sponsoring institution or its approved participating sites.
The chief resident must have major or primary responsibility for patient management with faculty supervision.

The chief resident should also have administrative responsibility as designated by the program director.

The specific portion of the clinical training that constitutes the 12 months of chief residency must be specifically designated as the chief residency experience at the time of the program review.

In addition to participating in the various educational conferences, the resident is expected to read and develop an approach to self-education to strengthen identified areas within his/her knowledge base.

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 residency faculty. (Core)

V.A.1.a).(1) Others eligible for appointment to the committee include faculty from other programs and non-physician members of the health care team. (Detail)

The Clinical Competency Committee will be composed of all members of the Neurosurgery faculty and the Program Coordinator.

V.A.1.b) There must be a written description of the responsibilities of the Clinical Competency Committee. (Core)
The Clinical Competency Committee should participate actively in:

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

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

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

The Clinical Competency Committee will meet semi-annually – approximately 1-2 weeks before the face-to-face review with the resident. The face-to-face review will be composed of all faculty members, along with the Program Coordinator.

V.A.1. Formative Evaluation

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

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

V.A.1.b).(3) document progressive resident performance improvement appropriate to educational level; and, (Core)

V.A.1.b).(4) provide each resident with documented semiannual evaluation of performance with feedback. (Core)

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

V.A.1.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.2. Summative Evaluation

V.A.2.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.2.b) The program director must provide a summative evaluation for each resident upon completion of the program. (Core)

This evaluation must:

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

V.A.2.b).(3) verify that the resident has demonstrated sufficient competence to enter practice without direct supervision. (Detail)

V.B. Faculty Evaluation

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

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

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

V.C. Program Evaluation and Improvement

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

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

V.C.1.a).(1) must be composed of at least 2 program faculty members and should include at least one resident; (Core)

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

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

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

V.C.1.a).(3).(b) reviewing and making recommendations for revision of competency-based curriculum goals and objectives; (Detail)
V.C.1.a).(3).(c) addressing areas of non-compliance with ACGME standards; and (Detail)

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

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

The Neurosurgery resident service conducts rounds twice daily, and handoff is performed during rounds.

During morning rounds, the post-call junior and senior residents are present with the remainder of the team. Overnight events are discussed, and the care plan is determined by the chief and communicated on rounds to the team. This facilitates communication during the hand off from the post-call residents.

During afternoon rounds, the on-call junior and senior residents are present with the remainder of the team, less the in-house post-call resident who has left by this time and who has already performed hand off. Daytime events are discussed, and the care plan is determined by the chief and communicated on rounds to the team. This facilitates (1) additional communication and updating of the plan during the hand off to the on-call residents, if they are the same ones as those who were on call during that day, and (2) communication of the most current plan during the hand off to the on-call residents, if they differ from the ones on call that day.

Our institution has adopted the Epic system as our electronic medical record. All neurosurgical inpatient and outpatient care is done through Epic. This enables us to ensure the prompt completion of medical records as the system will often not let you continue unless you have done what is necessary. Deficiencies are brought to the attention of residents and faculty in real time and the individual is prompted to complete the record and correct any deficiencies or inaccuracies in resident documentation.

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)

UTMB offers 35 private sleep rooms located on the 12th floor of John Sealy Towers for residents who are too fatigued to safely return home. All resident offices have couches which encourage residents to take needed “power naps”.

Providing residents with a sound academic and clinical education must be carefully planned and balanced with concerns for patient safety and resident well-being. UTMB strives to ensure that the learning objectives of the program are not compromised by excessive reliance on residents to fulfill service obligations. Didactic and clinical education must have priority in the allotment of residents’ time and energies. Duty hour assignments must recognize that faculty and residents collectively have responsibility for the safety and welfare of patients.

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)

All patient rooms have white boards with the current faculty, resident and nurse information.

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:

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

VI.D.3.b) Indirect Supervision:

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

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

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

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

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.

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.

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.

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.

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.

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

The Neurosurgery resident service communicates regularly with the faculty in the management of the patients on the neurosurgery
service. This facilitates both safe and supervised patient care and effective and timely resident teaching.

On-call Communication:

Consults will be discussed with the on-call or responsible staff member in an appropriate and timely manner. During the day, management of consult patients will be discussed with the faculty during the same day. Patients will preferably be presented to staff after requisite diagnostic studies have been obtained, or prior to studies if clinical acuity warrants or earlier faculty input is sought. In the evening and night, if the management is clear and no procedures are warranted emergently, the case will be discussed with the faculty the next morning. If an emergent procedure is indicated, or if the resident has any urgent questions regarding management, the resident will page or call the faculty member during the night, as needed.

Daily Communication

Residents will discuss cases with staff as staff are available during the day. Residents will be available to round with staff as needed during the day.

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 intensivists, 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)

1. Supervision of Residents
   a. Qualified faculty must supervise all patient care. The program director must ensure, direct, and document adequate supervision of residents at all times. Residents must be provided with rapid, reliable systems for communicating with supervising faculty.
   b. Faculty schedules must be structured to provide residents with continuous supervision and consultation.
   c. Faculty and residents must be educated to recognize the signs of fatigue and adopt and apply policies to prevent and counteract the potential negative effects.

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)

Moonlighting and/or internal electives (ER) by neurosurgery residents at UTMB is strictly forbidden in compliance with the Department of Surgery policy. In addition, moonlighting will be considered grounds for immediate termination of position and employment.

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 and/or internal electives (ER) 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)*

Moonlighting and/or internal electives (ER) by neurosurgery residents is strictly forbidden in compliance with Department of Surgery policy. In addition, moonlighting and/or internal electives (ER) will be considered grounds for immediate termination of position and employment.

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

VI.G.3. Mandatory Time Free of Duty

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

VI.G.4. Maximum Duty Period Length

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

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

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

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

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

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

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

VI.G.4.b).(4).(a).(ii) document the reasons for remaining to care for the patient in question and submit that documentation in every circumstance to the program director.
(Detail)

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

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

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

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

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

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

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.
(Detail)

VI.G.5.c).(1).(a) Circumstances of return-to-hospital activities with fewer than eight hours away from the hospital by residents in their final years of education must be monitored by the program director.
(Detail)

VI.G.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.
(Detail)

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 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.
**Goals of the Rotation**

The PGY1 year is divided into six months of clinical neurosurgery, and six months of general in-patient care - two months of trauma surgery, one month of Pediatric surgery, and three months of vascular surgery. The overarching goals of all the rotations in the first post-graduate year, and the neurosurgery rotation in particular, are for the resident to develop the knowledge, attitudes and skills needed to formulate principles and assess plan and initiate treatment of patients with surgical and medical problems. They are expected to participate in the pre-, intra-, and post-operative care of surgical patients. They are also expected to develop basic surgical skill and an understanding of surgical anesthesia, including anesthetic risks and the management of intraoperative anesthetic complications.

**Specific Objectives**

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Describing the anatomy of the cranial nerves and common cranial neuropathies seen in the clinic.
- Describing the neural foramina of the skull base and their contents.
- Discussing the annulus of Zinn and the contents of the superior orbital fissure.
- Discussing vascular anatomy of the head and neck from the aortic root to the tertiary branches of the named vessels of the cerebral arteries.
- Discussing the venous drainage of the brain.
- Discussing salutary conduction and membrane potentials.
- Discussing circulatory physiology and it’s disruption in sepsis and shock.
- Discussing pulmonary physiology and the pathophysiology of pulmonary edema and ARDS.
- Discussing bacterial translocation.
- Discussing the innervation of the urinary bladder and bladder dysfunction in different neurologic and neurosurgical diseases.
- Discussing the dermatomes and myotomes affected by the most common radicular syndromes.
- Discussing entrapment neuropathies of the ulnar, median, peroneal, and lateral femoral cutaneous nerves.

Patient Care

Residents must demonstrate competency in their knowledge of:
• Demonstrating the ability to manage acute respiratory insufficiency on the floor and in the ICU.
• Demonstrating the ability to effectively manage and treat the patient with chest pain in the acute phases of illness.
• Demonstrating the ability to effectively manage fluids, electrolytes, and nutrition in the adult, postoperative neurosurgical patient.
• Demonstrating the ability to effective manage pain in the postoperative neurosurgical patient.
• Demonstrating the ability to manage postoperative fever and the indications for further work up in the postoperative patient.

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
•Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co managing teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward
• Develop and keep a patient list and data base for the service
• Identify a procedure (central line placement, ventriculostomy, etc.) and keep track of certain parameters (infection rate, successful placement, number of passes) and identify procedures or techniques useful in the enhancement of procedure performance
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
Complete evaluations in a timely fashion

Method of Teaching

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists
- Neurosurgery grand rounds.
- Daily morning rounds.
- Case review/subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.

Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
- Written milestones summative evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient and outpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months
Goals of the Rotation

This rotation serves as an intensive introduction into the management of the trauma patient. The resident is expected to gain understanding of the management of traumatic diseases affecting all organ systems and not just those commonly seen in neurosurgical patients. They are expected to become proficient in the management of ICU issues related to blunt and penetrating injury to the chest, abdomen, pelvis, axial skeleton, extremities and head. This rotation is also meant to serve as an introduction to the coordination required between services in the management of the critically ill trauma patient. Because there is almost continual interaction between the trauma service and the neurosurgery service, the resident is also expected to develop rapport with the trauma housestaff and attendings so as to facilitate the future care of shared patients.

Specific Objectives

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 patients.

Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the pathophysiology and treatment of shock.
- Discussing parameters and types of fluid resuscitation in the injured patient.
- Discussing the pathophysiology and operative and nonoperative management of blunt and penetrating chest trauma.
- Discussing the pathophysiology and treatment of blunt and penetrating abdominal trauma.
- Discussing the pathophysiology and treatment of pelvic injuries.
- Discussing extremity trauma and fat embolism.
- Discussing peripheral nerve and plexus injuries and their diagnosis and management.
- Discussing the initial evaluation and management of the patient with spinal fractures. Be able to differentiate between stable and unstable fractures, complete and incomplete spinal cord injuries, and discuss the diagnosis and management of spinal shock in the multiply injured patient with a spinal cord injury.
- Discussing the Brain Trauma Foundation guidelines for the management of traumatic brain injury.
Patient Care

Residents must demonstrate competency in their knowledge of:

- Demonstrating knowledge of and competence in the initial evaluation and resuscitation of the multiply injured patient.
- Demonstrating proficiency in the clinical and radiographic diagnosis of the acute abdomen.
- Demonstrating proficiency in operative wound closure, abscess drainage, chest tube placement and management, and central venous line placement.
- Demonstrating competence in the management of both ward and ICU trauma patients.

Professionalism

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

Residents are expected to demonstrate:

- Compassion, integrity, and respect for others,
- Responsiveness to patient needs that supersedes self-interest.
- Respect for patient privacy and autonomy.
- Accountability to patients, society and the profession.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- Sensitivity to their patient’s pain and emotional states, and the ability to discuss death honestly, sensitively, patiently and compassionately.
- Timely attendance at scheduled conferences
- Timely attendance and participation in daily rounds
- Maintain rapport with other members of the healthcare team
- Discussion of lapses in professionalism at the weekly GME meeting
- Maintain honesty in all professional and personal matters
- Comply with institutional and ACGME work hour standards
- Self reporting of fatigue in order to ensure the highest level of patient safety
- Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:

- Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
- Communicate effectively with physicians, other health professionals, and health related agencies.
- Work effectively as a member or leader of a health care team or other professional group.
- Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co managing teams and consultants
• Communicate effectively with other members of the trauma team

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward.
• Daily trauma morning report and didactics.
• Develop and keep a patient list and data base for the service.
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for ICU and ward patients.

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in ICU and ward setting
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
- Complete evaluations in a timely fashion

**Method of Teaching**

- Daily rounds on wards and ICU with trauma attendings
- Daily morning report and didactics
- Weekly morbidity and mortality conference, resident teaching conference, and general and thoracic surgery grand rounds
- All surgical PGY1 residents undergo formal ATLS certification

**Evaluation of Residents**

- Written faculty evaluation of all 6 competencies at the end of the rotation
- 360 degree evaluation of resident by ICU nurses at the end of rotation
- Written milestones evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

- Electronic evaluation of the faculty by the resident at the end of rotation
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.
Goals of the Rotation

The resident will achieve a detailed knowledge of the pathophysiology of pediatric surgical diseases and will develop the skills needed to treat the pediatric surgery patient. The resident will provide patient care that is compassionate, appropriate, and effective for the treatment of pediatric surgery problems. The resident will investigate and evaluate his or her own patient care practices, appraise and assimilate scientific evidence, and improve patient care practices. The resident will demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and professional associates. The resident will demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. The resident will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Specific Objectives:

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 patients. Residents: (Outcome)

1. Discuss the embryology, physiology pathophysiology, presentation, diagnosis, and management of the major pediatric surgical diseases, including (but not limited to):
   a. appendicitis
   b. congenital diaphragmatic hernia
   c. gastroesophageal reflux
   d. Hirschsprung’s disease
   e. imperforate anus
   f. intussusception
   g. pyloric stenosis
   h. tracheo-esophageal fistula
   i. malrotations with midgut volvulus
   j. pediatric tumors
      i. neuroblastoma
      ii. Wilms tumor
      iii. Teratomas
   k. abdominal wall defects
      i. gastroschisis
      ii. omphalocele

2. Describe the unique details in the management of hospitalized children, including:
   a. fluid and electrolyte
b. nutritional therapies
c. pain control
d. antimicrobials
e. thermoregulation

3. Discuss the diagnosis and management of congenital outpatient pediatric diagnoses such as:
   a. inguinal hernias
   b. undescended testes
   c. thyroglossal duct cysts
   d. branchial cleft cysts
e. hygromas

Patient Care

1. Evaluates children with pediatric surgical diagnoses, performing the physical exams and initial assessment.
2. Treat pediatric patients postoperatively, managing their care, including:
   a. pain control
   b. fluid and electrolyte balance
   c. wound care
d. antibiotic therapy
3. Participate in the outpatient management of children with complex surgical conditions.

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 lifelong learning. (Outcome)

1. Uses information technology to prepare for surgical cases, bringing to the OR the knowledge of current modalities of care and the scientific evidence for that care.
2. Routinely analyzes the effectiveness of own practices in caring for pediatric surgery patients.
3. Improves own practices in the care of pediatric surgery patients by integrating appropriately gathered data and feedback.
4. Educates medical students and other healthcare professionals in the practices of pediatric surgery.
5. Uses library sources to perform research and perform literature searches.

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)
1. Educates patients and families in post operative and rehabilitative strategies for pediatric surgery patients.
2. Demonstrates compassion for patients and families afflicted with trauma.
3. Provides adequate counseling and informed consent to patients.
4. Listens to patients and their families.
5. Assimilates data and information provided by other members of the health care team.
6. Charts and records accurate information.

System 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)

1. Coordinates all aspects of the rehabilitation of the pediatric surgery patient.
2. Direct the rehabilitation of pediatric surgery patients by partnering with the following:
   a. Physical Therapy
   b. Occupational Therapy
   c. PRM physicians
   d. social workers
   e. nutritionalists
3. Advocates for pediatric surgery patients within the health care system.
4. Refers pediatric patients to the appropriate practitioners and agencies.
5. Facilitates the timely discharge of pediatric surgery patients

Professionalism

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

1. Develops a sensitivity of the unique stresses placed on families under care for pediatric injuries.
2. Exhibits an unselfish regard for the welfare of pediatric surgery patients.
3. Demonstrates firm adherence to a code of moral and ethical values.
4. Is respectful to pediatric patients and their families especially in times of trauma and stress to the family unit.
5. Respects and appropriately integrates other members of the pediatric surgery team.
6. Demonstrates sensitivity to the individual patient’s profession, life goals, and cultural background as they apply to surgery.
7. Is reliable, punctual, and accountable for own actions in the OR and clinic.
8. Understands the concepts of autonomy, beneficence, nonmaleficence, justice, and respect for life.

Method of Teaching

- Daily rounds on wards and attendings
- Daily morning report and didactics
• Weekly morbidity and mortality conference, resident teaching conference, and general and thoracic surgery grand rounds
• All surgical PGY1 residents undergo formal ATLS certification

**Evaluation of Residents**

• Written faculty evaluation of all 6 competencies at the end of the rotation
• 360 degree evaluation of resident by nurses at the end of rotation
• Written milestones evaluation and oral exam at six month intervals
• Conference and rounds attendance
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

• Electronic evaluation of the faculty by the resident at the end of rotation
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.

**Pediatric Surgery Reference:**

**Rotation**  
Vascular Surgery

**Location**  
UTMB

**Year**  
PGY1

**Length**  
3 months

**Responsible Faculty**  
Michael B. Silva, M.D.

**Supervising Faculty**  
Zulfiqar Cheema, M.D.
Charlie Cheng, M.D.
Grant Fankhauser, M.D.
Nikita Tihonov, M.D.

**Goals of the Rotation**
The purpose of this rotation is to provide the resident with an experience in the diagnosis and treatment of intra- and extra-cranial carotid disease with both open and endoscopic techniques. The goal is for the resident to gain understanding and familiarity with the indications for intervention in symptomatic and asymptomatic carotid artery disease. The resident is expected to develop surgical skills necessary to perform an open carotid endarterectomy and to understand the arguments for and against patch grafts, shunting, local anesthesia versus general, and open versus endovascular techniques. The resident will work primarily with the vascular surgeons, but arrangements have also been made for the resident to participate in intracranial endovascular procedures performed by our neuroradiologists. It is anticipated that this dual experience will provide the resident with adequate exposure to these techniques so as to stimulate those residents with particular interest in endovascular work to pursue additional training in this area.

**Specific Objectives**

**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 patients. Residents: *(Outcome)*

Must demonstrate competence in their knowledge of:

- Discussing the arterial anatomy of the head and neck.
- Discussing peripheral arterial anatomy.
- Discussing the venous drainage of the head and neck.
- Discussing the different criteria for the measurement of carotid stenosis.
- Discussing the indications for carotid endarterectomy.
- Discussing the indications for carotid stenting.
- Reviewing current treatment recommendation for the treatment of ruptured and unruptured cerebral aneurysms, ruptured and unruptured arteriovenous malformations, and embolization techniques for cases.
- Discussing the indications for stenting of the intracranial carotid artery and its branches.
- Discussing catheter techniques.
- Discussing the potential adverse effects of radiation on health care workers and the radiation safety precautions commonly practiced.
Patient Care

Residents must demonstrate competency in their knowledge of:

- Demonstrating proficiency in taking a vascular history and performing a focused vascular exam. Be able to interpret and use commonly ordered vascular exams and render a treatment plan for the vascular surgery patient.
- Demonstrating understanding of the surgical anatomy and proficiency in the performance of a carotid endarterectomy.
- Demonstrating understanding of and proficiency in vascular anastomosis.
- Demonstrating familiarity with the techniques of safe and effective arteriography, both intracranial and peripheral.
- Demonstrating the ability to manage immediate and subacute neurological sequelae of cerebral angiography.

Professionalism

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

Residents are expected to demonstrate:

- Compassion, integrity, and respect for others,
- Responsiveness to patient needs that supersedes self-interest.
- Respect for patient privacy and autonomy.
- Accountability to patients, society and the profession.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- Sensitivity to their patient’s pain and emotional states, and
- The ability to discuss death honestly, sensitively, patiently and compassionately.
- Timely attendance at scheduled conferences
- Timely attendance and participation in daily rounds
- Maintain rapport with other members of the healthcare team
- Discussion of lapses in professionalism at the weekly GME meeting
- Maintain honesty in all professional and personal matters
- Comply with institutional and ACGME work hour standards
- Self-reporting of fatigue in order to ensure the highest level of patient safety
- Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:
• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co-managing teams and consultants
• Communicate effectively with other members of the trauma team
• Communicate effectively with the pediatric patients themselves

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward with the pediatric surgery attending
• Develop and keep a patient list and data base for the service
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for ICU and ward patients

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in ICU and ward setting
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
• Complete evaluations in a timely fashion

**Method of Teaching**

• Daily rounds in the ICU and ward with senior general surgery residents and vascular faculty
• Weekly morbidity and mortality conference, resident teaching conference, and general and thoracic surgery grand rounds
• Faculty participation and supervision of operating room activities
• Attendance at any radiology teaching conferences specific to cerebrovascular disease or neuroradiology
• Direct observation and supervision of the resident by faculty in the operating room and angiography suite

**Evaluation of Residents**

• Written faculty evaluation of all 6 competencies at the end of the rotation
• 360 degree evaluation of resident by ICU nurses at the end of rotation
• Written milestones evaluation and oral exam at six month intervals
• Conference and rounds attendance
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

• Electronic evaluation of the faculty by the resident at the end of rotation
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.
**Goals of the Rotation**

This rotation serves as an intensive introduction into the management of all aspects of the critically ill surgical and medical patient. The resident is expected to gain understanding of the management of diseases affecting all organ systems and not just those commonly seen in neurosurgical patients. They are expected to become proficient in the management of ICU issues related to airway management, ventilator management, IV access, monitors of cardiac function, management of cardiac dysfunction and arrhythmias, pulmonary dysfunction, issues related to bowel dysfunction and nutrition, pressor management. This rotation is also meant to serve as an introduction to the coordination required between services in the management of the critically ill surgical patient.

**Specific Objectives**

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the indications for blood and blood product transfusion in the ICU patient. Also discuss common disorders of coagulation in these patients and the indications for intervention.
- Discussing the timing and method of administration of nutrition in the ICU patient.
- Discussing the various types and modalities of mechanical ventilation in critically ill patients and knowledge of the pathophysiology of pulmonary disease in the ICU.
- Discussing myocardial dysfunction in the ICU and the acute management of myocardial infarction and cardiac arrhythmias. Also discuss the management of cardiac arrest.
- Discussing the common electrolyte disorders seen in the ICU, their pathophysiology, and management.
- Discussing the different forms of shock and fluid resuscitation.
- Discussing the pathophysiology of deep venous thrombosis and pulmonary thromboembolism and the different recommendations for prophylaxis.
- Discussing gastrointestinal prophylaxis.
- Discussing the different types of analgesia and sedation used in the critical care unit.
- Discussing the different types of vascular access used in the ICU and the indications for each, along with their risks.
- Discussing and demonstrating familiarity with the acid base disorders.
Patient Care

Residents must demonstrate competency in their knowledge of:

- Demonstrating competence in the performance of endotracheal intubation.
- Demonstrating understanding of and competence in the establishment of different forms of vascular access in the critical care setting.
- Demonstrating knowledge of and competence in the fluid resuscitation of patients with colloid, crystalloid and hypertonic saline.
- Demonstrating the ability to effectively manage hemodynamic instability with a variety of different vasopressors.
- Demonstrating the ability to effectively manage mechanical ventilation and weaning of critically ill patients.
- Demonstrating knowledge of and the effective implementation of the various forms of nutritional support in the critically ill patient,
- Demonstrating knowledge of and implementation of important infection control techniques in the ICU setting, including but not limited to the effective use of hand washing and appropriate prep and drape techniques for invasive procedures in the ICU setting.

Professionalism

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

Residents are expected to demonstrate:

- Compassion, integrity, and respect for others,
- Responsiveness to patient needs that supersedes self-interest.
- Respect for patient privacy and autonomy.
- Accountability to patients, society and the profession.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- Sensitivity to their patient’s pain and emotional states, and
- The ability to discuss death honestly, sensitively, patiently and compassionately.
- Timely attendance at scheduled conferences
- Timely attendance and participation in daily rounds
- Maintain rapport with other members of the healthcare team
- Discussion of lapses in professionalism at the weekly GME meeting
- Maintain honesty in all professional and personal matters
- Comply with institutional and ACGME work hour standards
- Self reporting of fatigue in order to ensure the highest level of patient safety
- Active participation in end of life decision making and maintenance of rapport with patients families
Interpersonal and Communication Skills

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

Residents are expected to:
- Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
- Communicate effectively with physicians, other health professionals, and health related agencies.
- Work effectively as a member or leader of a health care team or other professional group.
- Act in a consultative role to other physicians and health professionals.
- Maintain comprehensive, timely and legible medical records, if applicable.
- Demonstrate effective listening and non-verbal communication skills.
- Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
- Demonstrate effective written communication skills.
- Involve patients in medical education.
- Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient.
- Communicate effectively with patients families regarding the disease process care plan and prognosis.
- Communicate effectively with co managing teams and consultants.
- Communicate effectively with other members of the neurosurgery team.

Practice Based Learning

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:
- Daily teaching rounds in the ICU and ward.
- Develop and keep a patient list and data base for the service.
- Identify a procedure (central line placement, ventriculostomy, etc.) and keep track of certain parameters (infection rate, successful placement, number of passes) and identify procedures or techniques useful in the enhancement of procedure performance.
- Demonstrate knowledge of and competency in adequate medical record documentation requirements for ICU patients.

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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Demonstrate competency in EMR documentation in ICU setting.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
- Complete evaluations in a timely fashion

**Method of Teaching**

- Daily rounds with ICU intensivists
- Daily scheduled didactic sessions with ICU faculty
- Weekly ICU journal club
- Weekly formal resident presentations on selected critical care topics

**Evaluation of Residents**

- Written faculty evaluation of all 6 competencies at the end of the rotation
- 360 degree evaluation of resident by ICU nurses at the end of rotation
- Written milestones evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

- Electronic evaluation of the faculty by the resident at the end of rotation
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.

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Goals of the Rotation

This rotation serves as an intensive introduction into the management of all aspects of the critically ill surgical and medical patient. The resident is expected to gain understanding of the management of diseases affecting all organ systems and not just those commonly seen in neurosurgical patients. They are expected to become proficient in the management of NCCU issues related to airway management, ventilator management, IV access, monitors of cardiac function, management of cardiac dysfunction and arrhythmias, pulmonary dysfunction, issues related to bowel dysfunction and nutrition, pressor management. This rotation is also meant to serve as an introduction to the coordination required between services in the management of the critically ill surgical patient.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the indications for blood and blood product transfusion in the NCCU patient. Also discuss common disorders of coagulation in these patients and the indications for intervention.
- Discussing the timing and method of administration of nutrition in the NCCU patient.
- Discussing the various types and modalities of mechanical ventilation in critically ill patients and knowledge of the pathophysiology of pulmonary disease in the NCCU,
- Discussing myocardial dysfunction in the NCCU and the acute management of myocardial infarction and cardiac arrhythmias. Also discuss the management of cardiac arrest.
- Discussing the common electrolyte disorders seen in the NCCU, their pathophysiology, and management.
- Discussing the different forms of shock and fluid resuscitation.
- Discussing the pathophysiology of deep venous thrombosis and pulmonary thromboembolism and the different recommendations for prophylaxis.
- Discussing gastrointestinal prophylaxis.
- Discussing the different types of analgesia and sedation used in the critical care unit.
- Discussing the different types of vascular access used in the NCCU and the indications for each, along with their risks.
- Discussing and demonstrating familiarity with the acid base disorders.
Patient Care

Residents must demonstrate competency in their knowledge of:

- Demonstrating competence in the performance of endotracheal intubation.
- Demonstrating understanding of and competence in the establishment of different forms of vascular access in the critical care setting.
- Demonstrating knowledge of and competence in the fluid resuscitation of patients with colloid, crystalloid and hypertonic saline.
- Demonstrating the ability to effectively manage hemodynamic instability with a variety of different vasopressors.
- Demonstrating the ability to effectively manage mechanical ventilation and weaning of critically ill patients.
- Demonstrating knowledge of and the effective implementation of the various forms of nutritional support in the critically ill patient.
- Demonstrating knowledge of and implementation of important infection control techniques in the NCCU setting, including but not limited to the effective use of hand washing and appropriate prep and drape techniques for invasive procedures in the NCCU setting.

Professionalism

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

Residents are expected to demonstrate:

- Compassion, integrity, and respect for others,
- Responsiveness to patient needs that supersedes self-interest.
- Respect for patient privacy and autonomy.
- Accountability to patients, society and the profession.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- Sensitivity to their patient’s pain and emotional states, and
- The ability to discuss death honestly, sensitively, patiently and compassionately.
- Timely attendance at scheduled conferences
- Timely attendance and participation in daily rounds
- Maintain rapport with other members of the healthcare team
- Discussion of lapses in professionalism at the weekly GME meeting
- Maintain honesty in all professional and personal matters
- Comply with institutional and ACGME work hour standards
- Self reporting of fatigue in order to ensure the highest level of patient safety
- Active participation in end of life decision making and maintenance of rapport with patients families
Interpersonal and Communication Skills

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

Residents are expected to:

- Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
- Communicate effectively with physicians, other health professionals, and health related agencies.
- Work effectively as a member or leader of a health care team or other professional group.
- Act in a consultative role to other physicians and health professionals.
- Maintain comprehensive, timely and legible medical records, if applicable.
- Demonstrate effective listening and non-verbal communication skills.
- Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
- Demonstrate effective written communication skills.
- Involve patients in medical education.
- Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient.
- Communicate effectively with patients families regarding the disease process care plan and prognosis.
- Communicate effectively with co-managing teams and consultants.
- Communicate effectively with other members of the neurosurgery team.

Practice Based Learning

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:

- Daily teaching rounds in the NCCU and ward.
- Develop and keep a patient list and data base for the service.
- Identify a procedure (central line placement, ventriculostomy, etc.) and keep track of certain parameters (infection rate, successful placement, number of passes) and identify procedures or techniques useful in the enhancement of procedure performance.
- Demonstrate knowledge of and competency in adequate medical record documentation requirements for NCCU patients.

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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Demonstrate competency in EMR documentation in NCCU setting.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
- Complete evaluations in a timely fashion.

Method of Teaching

- Daily rounds with NCCU intensivists
- Daily scheduled didactic sessions with NCCU faculty
- Weekly NCCU journal club
- Weekly formal resident presentations on selected critical care topics

Evaluation of Residents

- Written faculty evaluation of all 6 competencies at the end of the rotation
- 360 degree evaluation of resident by NCCU nurses at the end of rotation
- Written milestones evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at the end of rotation
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.

Goals of the Rotation

This rotation serves as the core educational experience for the resident in neurology. As such the goals are for the resident to learn through study and practical experience the neurological history and physical examination. They should become familiar with those aspects of the history which can aid in the differentiation of disease states and in the performance of a complete and comprehensive neurological examination. In addition, this rotation serves as the primary practical education experience in the performance and interpretation of diagnostic tests commonly used in neurology. The resident is expected to become familiar with electrophysiological tests including but not limited to electromyography, nerve conduction velocity, electroencephalography, somatosensory evoked potentials, motor evoked potentials, cortical mapping, brainstem auditory evoked potentials, visual evoked potentials, facial nerve monitoring, electronystagmograms, and urodynamic studies.

Specific Objectives

Medical Knowledge

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

Must demonstrate competence in their knowledge of:

- Discussing delirium and altered states of consciousness
- Discussing the different apraxias and their etiology
- Discussing the different forms of agnosia and their pathophysiology
- Discussing disorders of the visual system and pupils
- Discussing hearing loss and the clinical differentiation of the vestibular disorders.
- Discussing the common brainstem syndromes
- Discussing the different forms of ataxia
- Discussing the pathophysiology, clinical history, physical examination, and treatment of patients with the common movement disorders
- Discussing the significance of clinical history, examination, and differential diagnosis of patients presenting with weakness, monoplegia, diplegia, and quadriplegia
- Discussing the history, physical examination, differential diagnosis, workup and management of patients with radiculopathy
- Discussing the common laboratory tests used in neurological practice with the clinical significance of each
- Discussing the indications for, and technical performance and interpretation of the various electrophysiological tests mentioned in the goals section above
• Discussing the different forms of epilepsy and the surgical and pharmacologic treatment of each
• Discussing the different forms of peripheral neuropathy and the differential diagnosis of patients presenting with peripheral disorders
• Discussing disorders of autonomic dysfunction
• Discussing the history, examination, diagnosis and treatment of the different neuromuscular diseases as well as their pathophysiology
• Discussing neurological problems in the newborn including the floppy infant
• Demonstrating knowledge of the neurological problems seen in pregnancy
• Discussing the cranial neuropathies, their history, diagnosis, and treatment
• Discussing the different phases of sleep, the different sleep disorders, and the physiological effects of sleep deprivation
• Discussing the history, examination, inheritance, diagnosis, and treatment of the neurocutaneous syndromes
• Demonstrating basic understanding of the pathophysiology of the channelopathies and the metabolic and mitochondrial disorders

Patient Care

Residents must demonstrate competency in their knowledge of:

• The ability to take both a comprehensive and focused neurological history
• The ability to perform a comprehensive neurological exam
• The initial evaluation and management of the stroke patient as well as subacute and chronic care issues
• The ability to recognize the clinical manifestations of the different seizure disorders clinically and recognize the indication for the various antiepileptic medications available
• The ability to differentiate between the various presentations of headache and the diagnostic evaluation and workup for the various types of headaches seen in neurology practice
• Proficiency in the diagnosis and management of patients with the common movement disorders

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others.
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self-reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills.
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills; and
• Involve patients in medical decisions.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co-managing teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

• Daily teaching rounds in the ICU, clinic, and ward at the discretion of the neurology attending
• Develop and keep a list of patients seen in consultation, diagnoses, and diagnostic interventions observed and interpreted
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients
Systems Based Practice

Resident 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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Access, appropriately utilize and evaluate the effectiveness of the resources, providers and systems necessary to provide optimal neurosurgical care.
- Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
- Complete evaluations in a timely fashion.

Method of Teaching

- Daily rounds with more senior neurology residents, neurology faculty, ICU rounds with ICU intensivists as required.
- Neurosurgery grand rounds weekly.
- Daily morning report.
- Case review/subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.
- Weekly observation and participation in the performance and evaluation of inpatient and outpatient electrophysiological testing (EMG, NCV, SSEP, EEG).

Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months.
- 360 degree evaluation of resident by.
- Written Milestones summative evaluation and oral exam at six month intervals.
- Conference and rounds attendance.
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation.
- Review of inpatient and outpatient documentation patterns.
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

• Electronic evaluation of the faculty by the resident at three month intervals.
• Yearly electronic evaluation of the program via ACGME resident survey.
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience.
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months.
Goals of the Rotation

Residents are exposed to neuropathology during their core rotations in autopsy where they interact closely with the neuropathology faculty during “brain cutting” of autopsy cases and microscopic sign-out sessions of brain autopsy specimens, and during core rotations in surgical pathology through participation in frozen sections and unknown slide conferences. Residents can spend 1 month (more if desired) in the advanced neuropathology elective. This elective exposes the resident more intensively to surgical neuropathology (including frozen section evaluation of brain tumors), muscle neuropathology, autopsy neuropathology, and if available, peripheral nerve biopsies.

Specific Objectives

Medical Knowledge

Residents must demonstrate knowledge about established and evolving biomedical and clinical sciences and the application of this knowledge to pathology. Residents are expected to: (Outcome)

- Develop understanding of the pathogenesis of disease processes both in adult and pediatric populations through consultation of specialty textbooks, journal articles, and reviews.
- Become proficient in gross anatomy of the brain as it applies to the successful demonstration and understanding of lesions in situ or after dissection.
- Become proficient in microscopic anatomy of brain, peripheral nervous system and skeletal muscle, as it applies to the successful interpretation of histologic findings.
- Correlate gross anatomic, microscopic, and clinical findings with disease processes.
- Formulate logical differential diagnoses based on these findings.
- Develop an understanding of histopathologic prognostic factors and diagnostic features of neoplastic processes with molecular diagnostic correlates.
- Recognize organisms/parasites in the appropriate clinical setting utilizing standard special stains such as GMS, AFB, Gram, Giemsa, PAS, and immunohistochemistry and/or electron microscopy as appropriate.
- Be able to recognize skeletal muscle and peripheral nerve components ultrastructurally, including the sarcolemma, basal lamina, nucleus, myofibrils and their structures (A and I bands, Z lines), mitochondria. Axons, myelin, Schwann cells and perineurium.
- Understand the role of EM in diagnosis of myopathies and neuropathies
- Recognize histologic and ultrastructural abnormalities of most common myopathies and neuropathies
  - Muscular dystrophies (Duchenne and Becker)
  - Congenital muscular dystrophies
  - Congenital myopathies
  - Central core disease
  - Centronuclear myopathy
  - Nemaline myopathy
  - Metabolic myopathies
  - Glycogen and lipid storage diseases
  - Mitochondrial myopathies
• Inflammatory myopathies
• Axonal vs. demyelinating neuropathies
• Hypertrophic neuropathies

Patient Care

Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of surgical and autopsy neuropathology. Residents are expected to:

• Understand the flow of neuropathology specimens in the surgical pathology division and autopsy division from the time they leave the operating room/physician’s office/morgue, to the time that the cases are signed-out and finalized in the division and a report is generated to the clinician.
• Effectively communicate with clinicians, pathologists, and fellow residents, including the ability to discuss clinicopathologic correlations and clinical findings relevant to cases.
• Process gross specimens safely and efficiently from accession to discard.
• Process gross specimens efficiently and safely for frozen section diagnosis.
• Prepare neuropathology specimens for conventional histology, histochemistry, microbiology, electron microscopy, and molecular techniques, as indicated.
• Gather essential information about the patients from their medical records and their physicians
• Develop skills in gross specimen photography and photomicroscopy.
• Develop understanding of the principles and appropriate use of special stains and immunohistochemical stains necessary for diagnosis.
• Develop familiarity with the processing requirements of special stains needed for muscle biopsy interpretation.
• Order appropriate special and immunohistochemical stains for diagnosis
• Review histologic slides and form an opinion prior to sign-out with faculty
• Develop diagnostic skills based on interpretation of H-E slides for all types of specimens, including all disease categories relevant to central and peripheral nervous systems and neuromuscular disease.
  • Neoplastic
  • Neurodegenerative
  • Vascular/Ischemic
  • Infectious
  • Autoimmune/immune related/inflammatory
  • Environmental/occupational
  • Developmental/congenital/inherited
  • Nutritional/metabolic
  • Iatrogenic

• Develop understanding of laboratory information systems (LIS) and the electronic medical record at UTMB (EPIC) for acquiring patient clinical information applicable to neuropathology.
• Develop focused differential diagnoses by using and interpreting appropriate ancillary studies, which would contribute to the patient’s diagnosis and prognosis, such as special stains, immunohistochemical stains, electron microscopy or molecular testing.
• Become proficient in coding specimens based on CPT guidelines.
• Become proficient in grading and staging neuropathology neoplastic specimens based on universally accepted classification systems.
• Present departmental and interdepartmental conferences with appropriate illustrative material, interpretation, and literature citations. Preparation of high quality gross and microscopic photographs of surgical neuropathology specimens.
• Demonstrate knowledge of universal precautions and precautionary procedures to be used in handling surgical and autopsy neuropathology specimens.

Professionalism

Residents must demonstrate a commitment to fulfilling professional responsibilities, scrupulous ethical principles and sensitivity to a diverse patient population. Residents are expected to:

- Demonstrate commitment to ethical principles pertaining to confidentiality of patient information, informed consent, and business practices
- Demonstrate respect, compassion, and integrity in all interactions with patients, their families, clinical colleagues, senior staff pathologists, technologists, support staff, and other residents
- Demonstrate sensitivity and responsiveness to the ethnicity, diversity, age, gender, sexual orientation, and disabilities of patients, colleagues, and laboratory personnel
- Attend all required conferences and actively participate in them to enhance individual and group learning
- Demonstrate a commitment to excellence and on-going professional development
- Demonstrate adherence to guidelines and regulations of regulatory and accrediting agencies
- Demonstrate ability to recognize and identify deficiencies in peer performance

Interpersonal and communication skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and learning with other health care providers, patients, and patients’ families. Residents are expected to:

- Exhibit effective listening skills and the ability to follow standard operating procedures and verbal instructions.
- Interact with consultants, laboratory personnel, and administration in an appropriate manner
- Provide effective and professional consultation to other clinicians and other health care professionals by demonstrating care and respect for them and by sustaining ethically sound professional relationships with colleagues, patients, and patients’ families
- Provide accurate information transfer using non-verbal, explanatory, and writing skills
- Develop effective administrative skills regarding quality of technical work
- Develop problem-solving skills
- Work effectively as a team with other residents and health care providers

Practice Based Learning and Improvement

Residents must be able to demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices. Residents are expected to:

- Apply medical knowledge and the current literature referable to current cases
- Be able to utilize library, web-based, and other educational sources to work up cases and develop a differential diagnosis
- Analyze feedback obtained from faculty members during interactions in the rotation.
• Acquire skills to engage in “lifelong” learning through appraisal and assimilation of scientific studies related to specific anatomic pathology problems
• Facilitate learning of medical students, residents, and other health care professionals

Systems Based Practice

Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide optimal pathology services. Residents are expected to:

• Develop a plan to arrive at an accurate, timely, and cost-effective diagnostic strategy that best serves the patient and does not compromise patient care.
• Understand the pathologist's role and professional practices in relation to other health care professionals
• Demonstrate ability to access, understand, and utilize the resources, providers, and systems necessary to provide optimal care
• Advocate for quality patient care

Conferences

➢ Gross autopsy conference (twice weekly)
➢ Gross microscopic autopsy conference (weekly)
➢ Neuroradiology/neurosurgery conference (weekly)
➢ Neuropathology Conference (weekly)
➢ Neurology Grand Rounds (weekly)
➢ Autopsy gross brain conference (weekly)
➢ Neuro-oncology multidisciplinary tumor board (weekly)
➢ Residents are required to present a case at the Neuropathology conference by the end of the advanced elective.

Call Schedule

No call duties

Evaluation of Residents

• Written faculty evaluation of all 6 competencies every three months
• 360 degree evaluation of resident by
• Written Milestones summative evaluation and oral exam at six month intervals
• Conference and rounds attendance
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient and outpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

• Electronic evaluation of the faculty by the resident at three month intervals.
• Yearly electronic evaluation of the program via ACGME resident survey.
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience.
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months.

H: 2015-2016 Neuro-Path Goals and Objectives
Residents should demonstrate an understanding of neuroradiological imaging and interventions as they specifically relate to neurosurgical patients. All imaging and interventional cases will be interpreted and performed along with an attending neuroradiologist and neuroradiology fellow. At the beginning of each service, the faculty will overview the resident intensely, as the resident gains experience and knowledge, the supervising faculty will allow independence with supervision. The faculty will always be available to help provide the safest care for the patient.

**Specific Objectives**

**Medical Knowledge**

Residents must demonstrate knowledge about established and evolving biomedical and clinical sciences and the application of this knowledge to pathology. Residents are expected to: (Outcome)

**Junior Level:**

- Describe the precautions which should be taken when performing radiologic examinations.
- Identify the normal anatomical structures of the skull on antero-posterior, lateral, Towne and submental vertex radiographs.
- List the indications for carotid and cerebral angiography.
- Review the potential complications to intravenous contrast agents and discuss the management of same.
- Identify the major arteries and veins of the neck and brain on angiograms.
- Describe the concepts of computerized tomographic (CT) scanning.
- Identify the normal anatomical structures of the scalp, skull, dura, brain and cranial vasculature on CT scans.
- Describe the concepts of magnetic resonance (MR) scanning. Review the various imaging sequences which may be obtained.
- Identify the normal anatomical structures of the scalp, skull, dura, and cranial vasculature on MR scans.
- Recognize common traumatic injuries which may be detected by skull radiographs including:
  - linear skull fractures
  - depressed skull fractures
  - pneumocephalus
  - foreign bodies
- Recognize common pathological conditions which may be detected by skull radiographs including:
  - neoplasms
  - fibrous dysplasia
  - congenital bone diseases
  - metabolic bone disorders
  - infections
- Recognize common traumatic injuries which may be detected by head CT including:
  - skull fractures
  - pneumocephalus
c. intracranial hematomas
   1. epidural
   2. acute subdural
   3. chronic subdural
   4. intraparenchymal
   5. intraventricular
d. cerebral contusions
e. subarachnoid hemorrhage
f. foreign bodies

- Recognize common pathologic conditions which may be detected by head CT including:
  a. ischemic infarctions
  b. venous infarction
c. hydrocephalus
d. cysts
e. tumors
g. cerebral edema
h. infections
i. congenital abnormalities

- Recognize common traumatic injuries which may be detected by head MR scans including:
  a. Pneumocephalus
  b. Intracranial hematomas
     1. Epidural
     2. Acute subdural
     3. Chronic subdural
     4. Intraparenchymal
     5. Intraventricular
c. Cerebral contusions
d. Diffuse axonal injury

- Recognize common pathologic conditions which may be detected by head MR scans including:
  a. Ischemic infarction
  b. Venous infarction
c. Hydrocephalus
d. Cysts
e. Tumors
f. Cerebral edema
g. Vascular occlusions
h. Infections
i. Congenital abnormalities

- Identify the normal anatomical structures of the craniovertebral junction on plain radiographs.
- Review the radiographic diagnoses of platybasia and cranial setting.
- Describe the plain radiographic findings of common traumatic injuries to the craniovertebral junction including:
  a. occipital condyle fractures
  b. atlanto-occipital dislocation
c. jefferson fractures
d. posterior atlas fractures
e. dens fractures
f. axis body fractures
g. hangman’s fracture
h. atlas and axis facet fractures
i. atlanto-axial rotatory dislocation

• Distinguish between orthotropic and dystropic os odontoideum
• Describe the common congenital abnormalities of the craniovertebral junction
• Recognize common spinal congenital abnormalities on plain radiographs.
• Recognize common spinal traumatic injuries which may be detected by plain radiographs including:
  a. vertebral body fractures
  b. facet fractures and dislocations
  c. posterior element fractures
  d. transverse process fractures
  e. vertebral subluxation/ dislocation
• Recognize common spinal degenerative conditions which may be detected by plain radiographs.
• Discuss the indications for CT and MR scanning of the spine in the setting of trauma.
• Describe the CT scan appearance of each of the traumatic spinal lesions previously listed.
• Describe the MR scan appearance of:
  a. spinal ligament injury
  b. traumatic disc herniation
  c. spinal cord contusion
  d. spinal epidural hematoma
• Recognize common spinal degenerative conditions which may be detected by MR including:
  a. disc degeneration
  b. disc herniation
  c. degenerative spinal stenosis
  d. facet hypertrophy
  e. osteophyte formation
  f. foraminal stenosis
  g. degenerative spondylolisthesis
  h. degenerative scoliosis
  i. ossification of the posterior longitudinal ligament.
• Identify spinal and spinal cord tumors on CT and MR scans.
• Discuss the indications for spinal myelography
• Review the indications for spinal angiography
• Discuss the use of both the radiographic contrast and radionuclide shuntogram in evaluating neurosurgical patients.

Middle Level:
• Identify the common carotid and vertebral circulation congenital variants on angiograms.
• Recognize intracranial aneurysms on angiograms.
• Identify and characterize intracranial vascular malformations on angiograms. Recognize:
  a. arteriovenous malformations
  b. venous angiomas
  c. arteriovenous fistula
  d. feeding vessels
  e. draining veins
f. associated aneurysms

g. degree of shunting

- Discuss the angiographic evaluation of carotid and vertebral disease
- Review the role of MR angiography and venography in the evaluation of cerebrovascular disease, neoplasms, and trauma
- Describe the radiological evaluation of CNS vasculitis
- Describe the radiological evaluation of spinal vascular malformations
- Discuss the role of myelography in the evaluation of neurosurgical patients
- Discuss the radiological evaluation of suspected CNS and spinal infection
- Review MR neurography
- Describe the appearance of peripheral nerve tumors on MR scans
- Review the role of radionuclide scans in the evaluation of patients with suspected cranial and spinal disease
- Discuss the use of intraoperative radiographs and fluoroscopy
- List the indications for CT- and MR-guided biopsies
- Describe the concepts of ultrasonography
- Review the findings of normal and abnormal neonatal cranial ultrasound
- Review the findings of normal and abnormal carotid ultrasounds
- Discuss the use of transcranial doppler ultrasonography in the management of patients with subarachnoid hemorrhage, trauma, and occlusive vascular disease.

Senior Level:
- Review the indications for interventional endovascular therapies for:
  a. Aneurysms
  b. Vasospasm
  c. Cranial vascular malformations
  d. Spinal vascular malformations
  e. Tumor embolization
  f. Carotid and vertebral stenosis
  g. Carotid and vertebral dissection
- Describe the indications and techniques of endovascular trial occlusions
- Review the role of quantitative cerebral blood flow studies in the management of neurosurgical patients
- Describe the concepts of position emission tomography. Review the indications for obtaining such scans
- Describe the concepts of MR spectroscopy. Review the indications for obtaining such evaluations in neurosurgical patients
- Discuss the indications and technique of discography. Describe the procedure.
- Discuss the indications for percutaneous vertebroplasty. Describe the procedure.

Patient Care

Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of surgical and autopsy neuropathology. Residents are expected to:

- Understand the flow of neuropathology specimens in the surgical pathology division and autopsy division from the time that they leave the operating room/physician’s office/morgue, to the time
that the cases are signed-out and finalized in the division and a report is generated to the clinician.

- Effectively communicate with clinicians, pathologists, and fellow residents, including the ability to discuss clinicopathologic correlations and clinical findings relevant to cases.
- Process gross specimens safely and efficiently from accession to discard.
- Process gross specimens efficiently and safely for frozen section diagnosis.
- Prepare neuropathology specimens for conventional histology, histochemistry, microbiology, electron microscopy, and molecular techniques, as indicated.
- Gather essential information about the patients from their medical records and their physicians.
- Develop skills in gross specimen photography and photomicroscopy.
- Develop understanding of the principles and appropriate use of special stains and immunohistochemical stains necessary for diagnosis.
- Develop familiarity with the processing requirements of special stains needed for muscle biopsy interpretation.
- Order appropriate special and immunohistochemical stains for diagnosis.
- Review histologic slides and form an opinion prior to sign-out with faculty.
- Develop diagnostic skills based on interpretation of H-E slides for all types of specimens, including all disease categories relevant to central and peripheral nervous systems and neuromuscular disease.
  - Neoplastic
  - Neurodegenerative
  - Vascular/Ischemic
  - Infectious
  - Autoimmune/immune related/inflammatory
  - Environmental/occupational
  - Developmental/congenital/inherited
  - Nutritional/metabolic
  - Iatrogenic
- Develop understanding of laboratory information systems (LIS) and the electronic medical record at UTMB (EPIC) for acquiring patient clinical information applicable to neuropathology.
- Develop focused differential diagnoses by using and interpreting appropriate ancillary studies, which would contribute to the patient’s diagnosis and prognosis, such as special stains, immunohistochemical stains, electron microscopy or molecular testing.
- Become proficient in coding specimens based on CPT guidelines.
- Become proficient in grading and staging neuropathology neoplastic specimens based on universally accepted classification systems.
- Present departmental and interdepartmental conferences with appropriate illustrative material, interpretation, and literature citations. Preparation of high quality gross and microscopic photographs of surgical neuropathology specimens.
- Demonstrate knowledge of universal precautions and precautionary procedures to be used in handling surgical and autopsy neuropathology specimens.
Professionalism

Residents must demonstrate a commitment to fulfilling professional responsibilities, scrupulous ethical principles and sensitivity to a diverse patient population. Residents are expected to:

- Demonstrate commitment to ethical principles pertaining to confidentiality of patient information, informed consent, and business practices
- Demonstrate respect, compassion, and integrity in all interactions with patients, their families, clinical colleagues, senior staff pathologists, technologists, support staff, and other residents
- Demonstrate sensitivity and responsiveness to the ethnicity, diversity, age, gender, sexual orientation, and disabilities of patients, colleagues, and laboratory personnel
- Attend all required conferences and actively participate in them to enhance individual and group learning
- Demonstrate a commitment to excellence and on-going professional development
- Demonstrate adherence to guidelines and regulations of regulatory and accrediting agencies
- Demonstrate ability to recognize and identify deficiencies in peer performance

Interpersonal and communication skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and learning with other health care providers, patients, and patients’ families. Residents are expected to:

- Exhibit effective listening skills and the ability to follow standard operating procedures and verbal instructions.
- Interact with consultants, laboratory personnel, and administration in an appropriate manner
- Provide effective and professional consultation to other clinicians and other health care professionals by demonstrating care and respect for them and by sustaining ethically sound professional relationships with colleagues, patients, and patients’ families
- Provide accurate information transfer using non-verbal, explanatory, and writing skills
- Develop effective administrative skills regarding quality of technical work
- Develop problem-solving skills
- Work effectively as a team with other residents and health care providers

Practice Based Learning and Improvement

Residents must be able to demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices. Residents are expected to:

- Apply medical knowledge and the current literature referable to current cases
- Be able to utilize library, web-based, and other educational sources to work up cases and develop a differential diagnosis
- Analyze feedback obtained from faculty members during interactions in the rotation.
- Acquire skills to engage in “lifelong” learning through appraisal and assimilation of scientific studies related to specific anatomic pathology problems
- Facilitate learning of medical students, residents, and other health care professionals
Systems Based Practice

Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide optimal pathology services. Residents are expected to:

- Develop a plan to arrive at an accurate, timely, and cost-effective diagnostic strategy that best serves the patient and does not compromise patient care.
- Understand the pathologist’s role and professional practices in relation to other health care professionals
- Demonstrate ability to access, understand, and utilize the resources, providers, and systems necessary to provide optimal care
- Advocate for quality patient care

Conferences

- Gross autopsy conference (twice weekly)
- Gross microscopic autopsy conference (weekly)
- Neuroradiology/neurosurgery conference (weekly)
- Neuropathology Conference (weekly)
- Neurology Grand Rounds (weekly)
- Autopsy gross brain conference (weekly)
- Neuro-oncology multidisciplinary tumor board (weekly)
- Residents are required to present a case at the Neuropathology conference by the end of the advanced elective.

Call Schedule

No call duties

Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months
- 360 degree evaluation of resident by
- Written Milestones summative evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient and outpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals.
- Yearly electronic evaluation of the program via ACGME resident survey.
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience.
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months.

H: 2015-2016 Neuro-radiology Goals and Objectives
Goals of the Rotation

This rotation continues to serve as an introduction to the preoperative, operative, and postoperative care of the neurosurgical patient. The resident is expected to progress in their ability to independently evaluate patients, develop a differential diagnosis, proceed with special studies and tests, and then formulate and carry out a treatment plan. As the neurosurgery service at UTMB is a unified service, the resident will be exposed to a wide array of neurosurgical diseases. The PGY-2 resident will gain increasing responsibility for the care and management of neurosurgical ICU patients. They serve as the primary resident responsible for the floor and the ICU. Additionally, this resident will be the primary liaison between the emergency department and the neurosurgery service, and will serve as the first responder to neurosurgical emergencies. They are also expected to develop their own project in the field of practice based learning and improvement.

Specific Objectives

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 patients.

Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Describing the anatomy of the brain, spinal cord, peripheral nerves and the bony and soft tissue covering of each.
- Describing normal brain physiology.
- Describing the pathophysiology of TBI, SAH, ICH, and ischemic stroke.
- Describing normal and abnormal cerebral blood flow and autoregulation.
- Describing normal CSF pathways and the consequences of disruption of those pathways.
- Describing spinal cord injury and the grading systems used to prognosticate recovery in this disease state.
- Having knowledge of and demonstrate mastery of the guidelines used in the management of traumatic brain injury.
- Describing the pathophysiology of axial, subaxial cervical, thoracic, and lumbar spine trauma.

Patient Care

Residents must demonstrate competency in their knowledge of:

- Discussing the initial evaluation and ICU care of the patient with TBI, SAH, ICH, and ischemic stroke.
• Discussing the initial management, care, and indications for surgery in patients with spinal column injury and spinal cord damage.
• Discussing the clinical management of adult and pediatric patients with shunt failure.
• Demonstrating the performance of a complete and targeted neurological examination in patients with TBI, spinal cord injury, SAH, posterior fossa lesions, metabolic brain disorders, and hemispheric surgery.
• Demonstrating the ability to interpret MRI images of the brain, pituitary gland, and spine, spine films, myelography, CT of the brain and spine, MRA/MRV, and conventional angiography.
• Demonstrating the ability to perform the following bedside procedures; central line placement, arterial line placement, PA catheter placement, endotracheal intubation, ventriculostomy, halo vest, Gardner Wells tongs, and Camino monitor placement.
• Demonstrating proficiency in the operating room with CSF diversion procedures, craniotomy down to the level of the dura, and spine procedures down to the level of the dura.
• Demonstrating adequate attendance in clinics and the ability to take a neurological history and physical examination and formulate a treatment plan in the outpatient setting.

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self-reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients' families

Interpersonal and Communication Skills

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

Residents are expected to:
• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills.
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient.
• Communicate effectively with patients families regarding the disease process care plan and prognosis.
• Communicate effectively with co-managing teams and consultants.
• Communicate effectively with other members of the neurosurgery team.

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward.
• Develop and keep a patient list and data base for the service.
• Identify a procedure (central line placement, ventriculostomy, etc.) and keep track of certain parameters (infection rate, successful placement, number of passes) and identify procedures or techniques useful in the enhancement of procedure performance.
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients.

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
• Complete evaluations in a timely fashion.

**Method of Teaching**

• Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists.
• Neurosurgery grand rounds.
• Daily morning rounds.
• Case review/subspecialty teaching conference weekly.
• Specialty neurosurgery conference weekly.
• Neuropathology/neuroradiology weekly.
• Neuro-oncology conference weekly.
• Morbidity and mortality conference monthly.
• Direct faculty observation and supervision of residents in OR.

**Evaluation of Residents**

• Written faculty evaluation of all 6 competencies every three months.
• 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff.
• Written milestones summative evaluation and oral exam at six month intervals.
• Conference and rounds attendance.
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation.
• Review of inpatient and outpatient documentation patterns.
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities.
• Presentation of the resident portfolio at the 6 month evaluation.

**Evaluation of Faculty/Rotation/Program**

• Electronic evaluation of the faculty by the resident at three month intervals.
• Yearly electronic evaluation of the program via ACGME resident survey.
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience.
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter. Written faculty evaluation of all 6 competencies every three months.
Goals of the Rotation
This rotation serves to provide further experience for the resident in general neurosurgical care of the patient and focuses more on the outpatient evaluation of patients and elective surgery. The resident is expected to gain a progressive understanding and appreciation for the outpatient evaluation of neurosurgical patients and should, by the end of the rotation, be able to differentiate between surgical and nonsurgical problems. They should also progress to greater and greater independence in the operating room and be able to assume more and more responsibility for the operative and postoperative care of the patient. The resident should be able to demonstrate independence in the performance of certain operations, and should show significant improvement in surgical technique.

Specific Objectives
The PGY-3 resident is expected to pass the written examination of the ABNS taken “not-for-credit” before taking the exam for credit the following year.

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Describing the clinical history and physical examination findings (sensory, pain, motor, and reflex changes) for paracentral disc herniation from C23 to L5S1.
- Differentiating peripheral neuropathy, entrapment neuropathy, and other neurologic entities presenting with extremity symptoms and signs from radiculopathy.
- Describing far lateral lumbar disk herniation syndromes and how they present differently from paracentral disk herniation at the same level and be able to discuss the anatomic reasons for this difference.
- Describing the nonoperative treatment of the disk herniation syndromes and the indications for operation.
- Describing the differential diagnosis of sudden onset extremity weakness and how history affects this differential.
- Describing the differential diagnosis of gradual onset extremity weakness.
- Describing CNS infections and the indications for surgical intervention in each.
- Describing the differential diagnosis of extra-axial brain neoplasms and the neuropathology of each.
- Describing the differential diagnosis of ring enhancing lesions of the brain and their neuropathology.
• Describing the differential diagnosis and neuropathology of cerebellar lesions and how this differs according to patient age.
• Describing the differential diagnosis and neuropathology or spinal cord lesions and how history affects this differential.
• Describing the clinical history, pathophysiology, and treatment of cranial neuropathies.
• Describing the clinical presentation and neuropathology of the spinal cord syndromes.

Patient Care

Residents must demonstrate competency in their knowledge of:

• Demonstrating the ability to perform both a detailed and focused history and physical examination, form a differential diagnosis, interpret images, and independently formulate a treatment plan in the outpatient and inpatient settings.
• Demonstrating the ability to independently evaluate patients with emergent neurosurgical problems in the inpatient and outpatient settings and formulate treatment plans. The resident should then demonstrate the ability to carry out those treatment plans with minimal supervision of the faculty.
• Demonstrating the ability to effectively evaluate postoperative patients in the hospital, establish a differential diagnosis, and formulate a treatment plan.
• Demonstrating competency in performing the following operative procedures:
  o Lumbar decompressive laminectomy
  o Lumbar discectomy
  o VP shunt placement
  o LP shunt placement
  o Cervical laminectomy
  o Craniotomy for epidural, subdural, and intraparenchymal hematoma
  o Craniotomy for resection of tumors in noneloquent areas
  o Craniotomy for meningioma

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with comanaging teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward
• Develop and keep a patient list and data base for the service
• Identify a procedure (central line placement, ventriculostomy, etc.) and keep track of certain parameters (infection rate, successful placement, number of passes) and identify procedures or techniques useful in the enhancement of procedure performance
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
• Complete evaluations in a timely fashion.
• Participation in at least one value analysis/cost control committee meeting.
• Participation in at least one internal residency program review.

Method of Teaching

• Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists.
• Neurosurgery grand rounds.
• Daily morning rounds.
• Case review/subspecialty teaching conference weekly.
• Specialty neurosurgery conference weekly.
• Neuropathology/neuroradiology weekly.
• Neuro-oncology conference weekly.
• Morbidity and mortality conference monthly.
• Direct faculty observation and supervision of residents in OR.

Evaluation of Residents

• Written faculty evaluation of all 6 competencies every three months.
• 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff.
• Written milestones summative evaluation and oral exam at six month intervals.
• Conference and rounds attendance.
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient and outpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

• Electronic evaluation of the faculty by the resident at three month intervals
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months

H: 2013-2014 Neurosurgery 3 Goals & Objectives.doc
Goals of the Rotation

The focus of this rotation is on the care of the pediatric neurosurgery patient. Although the resident has been exposed to pediatric surgery on a near continual basis, this experience allows them to focus on this aspect of neurosurgery. The goal of the rotation is for the resident to acquire experience in the care of patients with diseases they may not have had much exposure to in their previous three years. As such, the experience of the resident should be tailored based on the extent of their previous exposure and needs. There should be progressive responsibility for patient management as deemed appropriate by the supervising faculty. The goal of the rotation is for the resident to reach the point where they can independently evaluate and manage the pediatric neurosurgical patient with minimal faculty supervision.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Describing the pathophysiology, diagnosis and treatment of craniosynostosis and related syndromes.
- Discussing pediatric CNS malignancy. Describe the diagnosis and management of these lesions.
- Describing the various forms of birth trauma seen in infants and discuss their treatment from the neurosurgical perspective.
- Discussing the pathophysiology and treatment of pediatric traumatic brain injury.
- Discussing the diagnosis and management of Chiari malformation in the pediatric population.
- Discussing post-traumatic, post-infectious, congenital, post-hemorrhagic hydrocephalus.
- Describing the radiographic variants of the spine seen in the pediatric population.
- Discussing the diagnosis and treatment of spinal dysraphism in the pediatric population.
- Discussing the diagnosis and treatment of the childhood epilepsies.
- Discussing the diagnosis and management options in shunt failure and infection.

Patient Care

Residents must demonstrate competency in their knowledge of:

- Demonstrating the practical application of published guidelines for the management of pediatric traumatic brain injury.
• Demonstrating proficiency in the performance of the following procedures with minimal faculty input:
  o Ventriculo-peritoneal, -pleural, and –atrial shunt
  o Supra- and infra-tentorial craniotomy for tumor
  o Tethered cord release
  o Diagnostic and therapeutic seizure surgery
  o Endoscopic ventriculoscopy, third ventriculostomy, and arachnoid cyst fenestration
• Demonstrating understanding of the physiological difference between children and adults and the effect this has on fluids, electrolytes, and nutrition.

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self-reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co-managing teams and consultants
• Communicate effectively with other members of the neurosurgery team
• Communicate effectively with the pediatric patients themselves

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward
• Develop and keep a patient list and data base for the service
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems

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• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
• Complete evaluations in a timely fashion

Method of Teaching

• Daily rounds with neurosurgery faculty, PICU rounds with PICU intensivists
• Neurosurgery grand rounds.
• Daily morning rounds.
• Case review/ subspecialty teaching conference weekly.
• Specialty neurosurgery conference weekly.
• Neuropathology/ neuroradiology weekly.
• Neuro-oncology conference weekly.
• Morbidity and mortality conference monthly.
• Direct faculty observation and supervision of residents in OR.

Evaluation of Residents

• Written faculty evaluation of all 6 competencies every three months
• 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
• Written milestones summative evaluation and oral exam at six month intervals
• Conference and rounds attendance
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient and outpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

• Electronic evaluation of the faculty by the resident at three month intervals
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter Written faculty evaluation of all 6 competencies every three months
Goals of the Rotation

The focus of this rotation is on the care of the pediatric neurosurgery patient. Although the resident has been exposed to pediatric surgery on a near continual basis, this experience allows them to focus on this aspect of neurosurgery. The goal of the rotation is for the resident to acquire experience in the care of patients with diseases they may not have had much exposure to in their previous three years. As such, the experience of the resident should be tailored based on the extent of their previous exposure and needs. There should be progressive responsibility for patient management as deemed appropriate by the supervising faculty. The goal of the rotation is for the resident to reach the point where they can independently evaluate and manage the pediatric neurosurgical patient with minimal faculty supervision.

Specific Objectives

Medical Knowledge

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

Must demonstrate competence in their knowledge of:

- Describing the pathophysiology, diagnosis and treatment of craniosynostosis and related syndromes.
- Discussing pediatric CNS malignancy. Describe the diagnosis and management of these lesions.
- Describing the various forms of birth trauma seen in infants and discuss their treatment from the neurosurgical perspective.
- Discussing the pathophysiology and treatment of pediatric traumatic brain injury.
- Discussing the diagnosis and management of Chiari malformation in the pediatric population.
- Discussing post-traumatic, post-infectious, congenital, post-hemorrhagic hydrocephalus.
- Describing the radiographic variants of the spine seen in the pediatric population.
- Discussing the diagnosis and treatment of spinal dysraphism in the pediatric population.
- Discussing the diagnosis and treatment of the childhood epilepsies.
- Discussing the diagnosis and management options in shunt failure and infection.

Patient Care

Residents must demonstrate competency in their knowledge of:
• Demonstrating the practical application of published guidelines for the management of pediatric traumatic brain injury.
• Demonstrating proficiency in the performance of the following procedures with minimal faculty input:
  o Ventriculo-peritoneal, -pleural, and –atrial shunt
  o Supra- and infra-tentorial craniotomy for tumor
  o Tethered cord release
  o Diagnostic and therapeutic seizure surgery
  o Endoscopic ventriculoscopy, third ventriculostomy, and arachnoid cyst fenestration
• Demonstrating understanding of the physiological difference between children and adults and the effect this has on fluids, electrolytes, and nutrition.

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others.
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences.
• Timely attendance and participation in daily rounds.
• Ability to maintain rapport with other members of the healthcare team.
• Ability to discuss of lapses in professionalism at the weekly GME meeting.
• Ability to maintain honesty in all professional and personal matters.
• Compliance with institutional and ACGME work hour standards.
• Self reporting of fatigue in order to ensure the highest level of patient safety.
• Active participation in end of life decision making and maintenance of rapport with patients families.

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies
• Work effectively as a member or leader of a health care team or other professional group
• Act in a consultative role to other physicians and health professionals
• Maintain comprehensive, timely and legible medical records, if applicable
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences
• Demonstrate effective written communication skills; and
• Involve patients in medical decisions
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with comanaging teams and consultants
• Communicate effectively with other members of the neurosurgery team
• Communicate effectively with the pediatric patients themselves

Practice Based Learning

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:

• Identify strengths, deficiencies, and limits in one’s knowledge and expertise.
• Set learning and improvement goals.
• Identify and perform appropriate learning activities.
• Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement.
• Incorporate formative evaluation feedback into daily practice.
• Locate, appraise, and assimilate evidence from scientific studies related to their patient’s health problems;
• Use information technology to optimize learning.
• Participate in the education of patient, families, students, residents, and other health professionals.
• This experience should include the education of undergraduate medical students.
• Incorporate evidence-based principles in their clinical practice.
• Participate in daily teaching rounds in the ICU and ward.
• Develop and keep a patient list and data base for the service.
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients.

Systems Based Practice

Resident 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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Access, appropriately utilize and evaluate the effectiveness of the resources, providers and systems necessary to provide optimal neurosurgical care.
- Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
- Complete evaluations in a timely fashion.

**Method of Teaching**

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, the pediatric neurosurgery fellow, PICU rounds with PICU intensivists
- Neurosurgery grand rounds weekly.
- Daily morning report.
- Case review/subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.

**Evaluation of Residents**

- Written faculty evaluation of all 6 competencies every three months
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
- Written milestones summative evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient and outpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation
Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals.
- Yearly electronic evaluation of the program via ACGME resident survey.
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.
- Written faculty evaluation of all 6 competencies every three months
Rotation: Methodist
Location: The Methodist Hospital, Houston, Texas
Year: PGY4
Length: 6 months
Responsible Faculty: David S. Baskin, M.D., F.A.C.S.
Supervising Faculty: J. Bob Blacklock, M.D.
Gavin W. Britz, M.D.
Paul J. Holman, M.D.
Rob Parrish, M.D.
Richard K. Simpson, M.D.
Todd W. Trask, M.D.
Jonathan Zhang, M.D.

Goals of the Rotation

The Methodist Hospital rotation primarily serves to augment the resident experience in stereotactic, functional, and epilepsy neurosurgery. Given the volume and breadth of cases at Methodist, the resident is also exposed to a wide variety of complex spine, skull base and vascular cases. This rotation serves as an outstanding opportunity for the resident to function in a high volume, well supervised environment and allows them to continue to mature in their surgical judgment and operative skill. The primary goal, however, is to give them the requisite experience in functional and seizure surgery.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the history of neurological surgery as it relates to pain and the role of neurosurgeons in the management of chronic and acute pain.
- Discussing the pathophysiology, medical management, and indications for surgery in Parkinson’s disease and tremor.
- Discussing the presurgical evaluation of the patient with intractable seizures.
- Discussing the various surgical procedures used in management of intractable seizures.
- Discussing the procedures used currently in the management of patients with intractable psychiatric disease.
- Discussing the pathophysiology, diagnosis, and treatment of facial pain.
- Discussing glossopharyngeal neuralgia.
- Discussing the role of intrathecal medication in the management of chronic pain states and spasticity.
- Discussing nerve stimulation and the indications for its use in clinical practice.
- Discussing dorsal column stimulation.
Patient Care

Residents must demonstrate competency in their knowledge of:

- Their ability to independently perform the following procedures with faculty supervision
  - Diagnostic craniotomy for epilepsy
  - Therapeutic craniotomy for epilepsy
  - Stereotactic placement of deep brain stimulation electrodes for movement disorder
  - Placement of intrathecal catheter and pump for the administration of intrathecal medication
  - Placement of dorsal column stimulator and stimulus generator

Professionalism

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

Residents are expected to demonstrate:

- Compassion, integrity, and respect for others,
- Responsiveness to patient needs that supersedes self-interest.
- Respect for patient privacy and autonomy.
- Accountability to patients, society and the profession.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- Sensitivity to their patient’s pain and emotional states.
- The ability to discuss death honestly, sensitively, patiently and compassionately
- Timely attendance at scheduled conferences
- Timely attendance and participation in daily rounds
- Maintain rapport with other members of the healthcare team
- Discussion of lapses in professionalism at the weekly GME meeting
- Maintain honesty in all professional and personal matters
- Comply with institutional and ACGME work hour standards
- Self reporting of fatigue in order to ensure the highest level of patient safety
- Active participation in end of life decision making and maintenance of rapport with patients and families

Interpersonal and Communication Skills

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

Residents are expected to:

- Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
- Communicate effectively with physicians, other health professionals, and health related agencies.
- Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with comanaging teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward
• Develop and keep a patient list and data base for the service
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients
• Submit at least one case report or case series for presentation or publication

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
• Complete evaluations in a timely fashion
• Participate in and comply with any hospital mandated systems improvement and/or patient safety initiative

Method of Teaching

• Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists
• Neurosurgery grand rounds bimonthly
• Tumor board monthly
• Didactics/case conference monthly
• Vascular conference every other month
• Direct supervision by the attending faculty in the operating room

Evaluation of Residents

• Written faculty evaluation of all 6 competencies every three months
• 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
• Written milestones summative evaluation and oral exam at six month intervals
• Conference and rounds attendance
• Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
• Review of inpatient and outpatient documentation patterns
• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

• Electronic evaluation of the faculty by the resident at three month intervals
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter. Written faculty evaluation of all 6 competencies every three months
Goals of the Rotation

The goal of the MD Anderson rotation is to expose the resident to a broad spectrum of oncologic disease in the setting of a large and internationally renowned institution. The resident is expected to function as a member of the neurosurgical team on this very busy service and interact with a variety of fellows and residents from other institutions. They are expected to take progressive responsibility for patient management as deemed appropriate by their supervising faculty. The rotation exposes the resident to the full spectrum of neurosurgical oncology, including malignant brain tumors, skull base pathology, pituitary tumors, benign brain tumors, primary and metastatic tumors of the spine, and peripheral nerve tumors and disorders. The overarching goal is for the resident to continue to develop in their ability to independently diagnosis and treat patients with neurosurgical oncologic problems.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the pathophysiology, grading, treatment alternatives, adjuvant therapy, and prognosis of supratentorial gliomas.
- Discussing the pathophysiology, grading, treatment alternatives, adjuvant therapy, and prognosis of infratentorial gliomas.
- Discussing the pathophysiology and treatment alternatives in patients with brain metastasis.
- Discussing the surgical approaches and reconstruction of the lateral skull base.
- Discussing transfacial approaches to the anterior skull base and the indications for their use.
• Discussing the pathophysiology and treatment of pituitary adenomas.
• Discussing the pathophysiology and treatment of metastatic disease to the spine and the indications for operation and nonoperative therapy.
• Discussing primary spinal cord tumors and their treatment.
• Discussing tumors affecting the skull base.
• Discussing stereotactic radiosurgery and the different techniques available. Be able to discuss the physics and dosimetry involved. Also describing the physics and clinical application of proton beam radiation.
• Discussing the role of framed and frameless stereotaxy and intraoperative imaging (CT and MRI) in modern neurosurgical practice.
• Discussing the principles and physics involved in the radiotherapy of CNS malignancy.

Patient Care

Residents must demonstrate competency in their knowledge of:

• The anatomy and the ability to perform a majority of the following procedures with faculty supervision
  o Supratentorial craniotomy for intraparenchymal tumor
  o Infratentorial craniotomy for posterior fossa
  o Suboccipital craniotomy for CP angle tumor
  o Transsphenoidal resection of pituitary adenoma utilizing endoscopy as an adjunct
  o Subfrontal approach to the sellar and parasellar area
  o Transfacial resection of anterior skull base tumor
  o Exposure, resection and reconstruction of the lateral skull base
  o Intraoperative MRI
  o Stereotactic radiosurgery for brain mets
• The ability to recognize and appropriately manage endocrine dysfunction following hypophysectomy for tumor.
• The ability to recognize and appropriately manage CSF leaks in the postoperative patient.
• The ability to see and evaluate inpatient consultations in a cancer center and develop treatment plans with the guidance of faculty.

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families

Interpersonal and Communication Skills

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

Residents are expected to:
• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co managing teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:
• Daily teaching rounds in the ICU and ward
• Develop and keep a patient list and data base for the service
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients
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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
- Complete evaluations in a timely fashion.

Method of Teaching

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists.
- Monthly morbidity and mortality conference.
- Weekly pre-operative conference.
- Weekly neuro-oncology conference.
- Bi-weekly neurosurgery teaching conference.
- Weekly grand rounds.
- Bi-monthly stereotactic spine radiosurgery conference.
- Weekly tumor board.
- Direct faculty observation and supervision of residents in OR.

Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months.
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff.
- Written milestones summative evaluation and oral exam at six month intervals.
- Conference and rounds attendance.
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation.
- Review of inpatient and outpatient documentation patterns.

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• Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
• Presentation of the resident portfolio at the 6 month evaluation

**Evaluation of Faculty/Rotation/Program**

• Electronic evaluation of the faculty by the resident at three month intervals
• Yearly electronic evaluation of the program via ACGME resident survey
• Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
• Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter
• Written faculty evaluation of all 6 competencies every three months
**Rotation**  Senior Residency  
**Location**  UTMB  
**Year**  PGY-4, PGY-5, PGY-6 & PGY-7  
**Length**  12 months  
**Responsible Faculty**  Joel T. Patterson, M.D., F.A.C.S.  
**Supervising Faculty**  Aaron Mohanty, M.D.  
Juan Ortega-Barnett, M.D.

**Goals of the Rotation**

In this Senior Residency year of ACGME accredited training the residents are expected to progress in their ability to independently evaluate and manage the neurosurgical patient to the point of independent decision making. They have major or primary responsibility for patient management with faculty supervision. These residents are also expected to function as the administrative chiefs and works closely with the program director in the day to day functioning of the service. They are also responsible for the resident call schedule and assurance that assigned responsibilities do not put other residents at risk for the violation of work hours. The residents are expected to advance in their knowledge of the more complex neurosurgical problems, to formulate treatment plans for these patients, and to carry out the plan in the operating room with faculty supervision.

**Specific Objectives**

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 patients. Residents: *(Outcome)*

Must demonstrate competence in their knowledge of:

- Discussing the pathophysiology and indications for treatment of meningiomas of the convexity, planum, olfactory groove, falx, tentorium, petrous ridge, sphenoid wing, and posterior fossa.
- Discussing the pathophysiology and treatment alternatives in craniopharyngioma.
- Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured cerebral aneurysms of the anterior circulation.
- Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured posterior fossa cerebral aneurysms.
- Discussing dural arteriovenous malformations.
- Discussing spinal arteriovenous malformations, their classification, and treatment.
- Discussing the pathophysiology and treatment of supratentorial, infratentorial and brainstem cavernous malformations.
- Discussing the pathophysiology and treatment alternatives in hemangioblastoma and von Hippel Lindau disease.
- Discussing the positioning, monitoring, and anesthetic concerns with posterior fossa cases and the management of intraoperative and postoperative complications.
- Discussing the pathophysiology and treatment of acoustic neuromas.
- Discussing the pathophysiology and treatment of glomus jugulare tumors.
- Discussing the pathophysiology, diagnosis, and management of cerebellar tumors in adults.
• Discussing the pathophysiology, diagnosis, and treatment of brainstem gliomas.
• Discussing the pathophysiology, diagnosis, and treatment of ependymomas and fourth ventricular tumors.
• Discussing the diagnosis and treatment of basilar invagination and cranial settling.
• Discussing the diagnosis and treatment of spontaneous and postoperative cerebrospinal fluid fistula.
• Discussing the indications and techniques used for extracranial procedures for facial nerve reanimation.
• Discussing the surgical approaches to the third ventricle.
• Discussing the surgical approaches to the lateral ventricle.
• Discussing the pathophysiology, diagnosis and treatment alternatives in orbital tumors.

Patient Care

Residents must demonstrate competency in their knowledge of:

• The ability to perform the following procedures with faculty supervision
  o Pterional craniotomy for the clipping of anterior circulation aneurysm
  o Supratentorial craniotomy for intra- and extra-axial tumor
  o Far lateral suboccipital craniotomy
  o Retrosigmoid approach for CP angle tumor, microvascular decompression
  o Laminectomy for resection of extramedullary and intramedullary tumor
  o Craniocervical decompression for Chiari malformation
  o Subfrontal approach to the sellar and parasellar area
  o Trans-sphenoidal hypophysectomy for pituitary tumor
  o Posterior cervical, thoracic, and lumbar instrumentation cases
  o Anterior thoracolumbar decompression and fusion cases
  o Posterior occipitocervical fusion
• The ability to independently access and manage emergent and elective neurosurgical patients in the inpatient and outpatient environment with faculty supervision
• The ability to effectively diagnose and manage complications on the ward and in the clinic with faculty supervision
• The ability to independently decide which patients will benefit from surgical intervention and those who would benefit from a more conservative approach
• The ability to recognize one’s own limitations and consult other health care professionals in an appropriate manner

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families
• Act as a leader of the neurosurgical team and engender the respect of colleagues and other health care professionals in the hospital

Interpersonal and Communication Skills

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

Residents are expected to:
• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co managing teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

- Daily teaching rounds in the ICU and ward
- Develop and keep a patient list and data base for the service
- Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients
- Maintain a resident portfolio outlining clinical, academic, educational, and service accomplishments

**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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
- Complete evaluations in a timely fashion
- Participation in at least one value analysis/cost control committee meeting

**Method of Teaching**

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists
- Neurosurgery grand rounds.
- Daily morning rounds.
- Case review/ subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/ neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.
Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
- Written milestones summative evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient and outpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter
- Written faculty evaluation of all 6 competencies every three months
Goals of the Rotation

In this Chief Residency year of ACGME accredited training the resident is expected to progress in their ability to independently evaluate and manage the neurosurgical patient to the point of independent decision making. They have major or primary responsibility for patient management with faculty supervision. This resident is also expected to function as the administrative chief and works closely with the program director in the day to day functioning of the service. They are also responsible for the resident call schedule and assurance that assigned responsibilities do not put other residents at risk for the violation of work hours. The resident is expected to advance in their knowledge of the more complex neurosurgical problems, to formulate treatment plans for these patients, and to carry out the plan in the operating room with faculty supervision.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the pathophysiology and indications for treatment of meningiomas of the convexity, planum, olfactory groove, falx, tentorium, petrous ridge, sphenoid wing, and posterior fossa.
- Discussing the pathophysiology and treatment alternatives in craniopharyngioma.
- Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured cerebral aneurysms of the anterior circulation.
- Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured posterior fossa cerebral aneurysms.
- Discussing intradural arteriovenous malformations.
- Discussing spinal arteriovenous malformations, their classification, and treatment.
- Discussing the pathophysiology and treatment of supratentorial, infratentorial and brainstem cavernous malformations.
- Discussing the pathophysiology and treatment alternatives in hemangioblastoma and von Hippel Lindau disease.
- Discussing the positioning, monitoring, and anesthetic concerns with posterior fossa cases and the management of intraoperative and postoperative complications.
- Discussing the pathophysiology and treatment of acoustic neuromas.
- Discussing the pathophysiology and treatment of glomus jugulare tumors.
- Discussing the pathophysiology, diagnosis, and management of cerebellar tumors in adults.
• Discussing the pathophysiology, diagnosis, and treatment of brainstem gliomas.
• Discussing the pathophysiology, diagnosis, and treatment of ependymomas and fourth ventricular tumors.
• Discussing the diagnosis and treatment of basilar invagination and cranial settling.
• Discussing the diagnosis and treatment of spontaneous and postoperative cerebrospinal fluid fistula.
• Discussing the indications and techniques used for extracranial procedures for facial nerve reanimation.
• Discussing the surgical approaches to the third ventricle.
• Discussing the surgical approaches to the lateral ventricle.
• Discussing the pathophysiology, diagnosis and treatment alternatives in orbital tumors.

Patient Care

Residents must demonstrate competency in their knowledge of:

• The ability to perform the following procedures with faculty supervision
  o Pterional craniotomy for the clipping of anterior circulation aneurysm
  o Supratentorial craniotomy for intra- and extra-axial tumor
  o Far lateral suboccipital craniotomy
  o Retrosigmoid approach for CP angle tumor, microvascular decompression
  o Laminectomy for resection of extramedullary and intramedullary tumor
  o Craniocervical decompression for Chiari malformation
  o Subfrontal approach to the sellar and parasellar area
  o Trans-sphenoidal hypophysectomy for pituitary tumor
  o Posterior cervical, thoracic, and lumbar instrumentation cases
  o Anterior thoracolumbar decompression and fusion cases
  o Posterior occipitocervical fusion
• The ability to independently access and manage emergent and elective neurosurgical patients in the inpatient and outpatient environment with faculty supervision
• The ability to effectively diagnose and manage complications on the ward and in the clinic with faculty supervision
• The ability to independently decide which patients will benefit from surgical intervention and those who would benefit from a more conservative approach
• The ability to recognize one’s own limitations and consult other health care professionals in an appropriate manner

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families
• Act as a leader of the neurosurgical team and engender the respect of colleagues and other health care professionals in the hospital

Interpersonal and Communication Skills

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

Residents are expected to:
• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient
• Communicate effectively with patients families regarding the disease process care plan and prognosis
• Communicate effectively with co managing teams and consultants
• Communicate effectively with other members of the neurosurgery team

Practice Based Learning

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:

- Daily teaching rounds in the ICU and ward
- Develop and keep a patient list and data base for the service
- Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients
- Maintain a resident portfolio outlining clinical, academic, educational, and service accomplishments

**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:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
- Coordinate patient care within the health care system relevant to their clinical specialty.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
- Advocate for quality patient care and optimal patient care systems.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and implementing potential systems solutions.
- Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
- Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems
- Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion
- Complete evaluations in a timely fashion
- Participation in at least one value analysis/cost control committee meeting

**Method of Teaching**

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists
- Neurosurgery grand rounds.
- Daily morning rounds.
- Case review/ subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/ neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.
Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff
- Written milestones summative evaluation and oral exam at six month intervals
- Conference and rounds attendance
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation
- Review of inpatient and outpatient documentation patterns
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities
- Presentation of the resident portfolio at the 6 month evaluation

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals
- Yearly electronic evaluation of the program via ACGME resident survey
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter
- Written faculty evaluation of all 6 competencies every three months
Rotation: Transition to Practice
Location: UTMB
Year: PGY-7
Length: 12 months
Responsible Faculty: Joel T. Patterson, M.D., F.A.C.S.
Supervising Faculty: Aaron Mohanty, M.D.
Juan Ortega-Barnett, M.D.

Goals of the Rotation

In this Transition to Practice Residency year of ACGME accredited training the residents are expected to progress in their ability to independently evaluate and manage the neurosurgical patient to the point of independent decision making. This year allows residents to function as a heavily mentored junior faculty member with independent operative, clinic and on-call time. They have major or primary responsibility for patient management with faculty supervision. The residents are expected to advance in their knowledge of the more complex neurosurgical problems, to formulate treatment plans for these patients, and to carry out the plan in the operating room with faculty supervision.

Rotation Specific Objectives

1. Perform common Neurosurgical procedures with minimal or no assistance.
2. Enter practice as competent neurosurgeons.
3. Successfully manage and run an outpatient clinic.
4. Add to the participant’s fund of knowledge regarding neurosurgical patient management.
5. Handle a large patient volume.
6. Handle the business aspects of practice.
7. Master CPT coding.
8. Function as a member/ leader of a healthcare team.
9. Use resources of the healthcare team in patient management.
10. Critically analyze patient complications.

Specific Objectives

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 patients. Residents: (Outcome)

Must demonstrate competence in their knowledge of:

- Discussing the pathophysiology and indications for treatment of meningiomas of the convexity, planum, olfactory groove, falx, tentorium, petrous ridge, sphenoid wing, and posterior fossa.
- Discussing the pathophysiology and treatment alternatives in craniopharyngioma.
- Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured cerebral aneurysms of the anterior circulation.
• Discussing the pathophysiology and treatment alternatives in the treatment of patients with ruptured and unruptured posterior fossa cerebral aneurysms.
• Discussing spinal arteriovenous malformations, their classification, and treatment.
• Discussing the pathophysiology and treatment of supratentorial, infratentorial and brainstem cavernous malformations.
• Discussing the pathophysiology and treatment alternatives in hemangioblastoma and von Hippel Lindau disease.
• Discussing the positioning, monitoring, and anesthetic concerns with posterior fossa cases and the management of intraoperative and postoperative complications.
• Discussing the pathophysiology and treatment of acoustic neuromas.
• Discussing the pathophysiology and treatment of glomus jugulare tumors.
• Discussing the pathophysiology, diagnosis, and management of cerebellar tumors in adults.
• Discussing the pathophysiology, diagnosis, and treatment of brainstem gliomas.
• Discussing the pathophysiology, diagnosis, and treatment of ependymomas and fourth ventricular tumors.
• Discussing the diagnosis and treatment of basilar invagination and cranial settling.
• Discussing the diagnosis and treatment of spontaneous and postoperative cerebrospinal fluid fistula.
• Discussing the indications and techniques used for extracranial procedures for facial nerve reanimation.
• Discussing the surgical approaches to the third ventricle.
• Discussing the surgical approaches to the lateral ventricle.
• Discussing the pathophysiology, diagnosis and treatment alternatives in orbital tumors.

Patient Care

Residents must demonstrate competency in their knowledge of:

• The ability to perform the following procedures with faculty supervision
  o Pterional craniotomy for the clipping of anterior circulation aneurysm
  o Supratentorial craniotomy for intra- and extra-axial tumor
  o Far lateral suboccipital craniotomy
  o Retrosigmoid approach for CP angle tumor, microvascular decompression
  o Laminectomy for resection of extramedullary and intramedullary tumor
  o Cranio-cervical decompression for Chiari malformation
  o Subfrontal approach to the sellar and parasellar area
  o Trans-sphenoidal hypophysectomy for pituitary tumor
  o Posterior cervical, thoracic, and lumbar instrumentation cases
  o Anterior thoracolumbar decompression and fusion cases
  o Posterior occipitocervical fusion
• The ability to independently access and manage emergent and elective neurosurgical patients in the inpatient and outpatient environment with faculty supervision
• The ability to effectively diagnose and manage complications on the ward and in the clinic with faculty supervision
• The ability to independently decide which patients will benefit from surgical intervention and those who would benefit from a more conservative approach
• The ability to recognize one’s own limitations and consult other health care professionals in an appropriate manner

Professionalism

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

Residents are expected to demonstrate:

• Compassion, integrity, and respect for others,
• Responsiveness to patient needs that supersedes self-interest.
• Respect for patient privacy and autonomy.
• Accountability to patients, society and the profession.
• Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
• Sensitivity to their patient’s pain and emotional states, and
• The ability to discuss death honestly, sensitively, patiently and compassionately.
• Timely attendance at scheduled conferences
• Timely attendance and participation in daily rounds
• Maintain rapport with other members of the healthcare team
• Discussion of lapses in professionalism at the weekly GME meeting
• Maintain honesty in all professional and personal matters
• Comply with institutional and ACGME work hour standards
• Self reporting of fatigue in order to ensure the highest level of patient safety
• Active participation in end of life decision making and maintenance of rapport with patients families
• Act as a leader of the neurosurgical team and engender the respect of colleagues and other health care professionals in the hospital

Interpersonal and Communication Skills

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

Residents are expected to:

• Communicate effectively with patient, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
• Communicate effectively with physicians, other health professionals, and health related agencies.
• Work effectively as a member or leader of a health care team or other professional group.
• Act in a consultative role to other physicians and health professionals.
• Maintain comprehensive, timely and legible medical records, if applicable.
• Demonstrate effective listening and non-verbal communication skills
• Demonstrate an effective therapeutic relationship with patients and their families, with respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences.
• Demonstrate effective written communication skills.
• Involve patients in medical education.
• Communicate effectively with nursing and ancillary staff regarding the plan of care for each patient.
• Communicate effectively with patients families regarding the disease process care plan and prognosis.
• Communicate effectively with co managing teams and consultants.
• Communicate effectively with other members of the neurosurgery team.

Practice Based Learning

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:

• Daily teaching rounds in the ICU and ward.
• Develop and keep a patient list and data base for the service.
• Demonstrate knowledge of and competency in adequate medical record documentation requirements for inpatients and outpatients.
• Maintain a resident portfolio outlining clinical, academic, educational, and service accomplishments.

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:

• Work effectively in various health care delivery settings and systems relevant to their clinical specialty.
• Coordinate patient care within the health care system relevant to their clinical specialty.
• Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.
• Advocate for quality patient care and optimal patient care systems.
• Work in interprofessional teams to enhance patient safety and improve patient care quality.
• Participate in identifying system errors and implementing potential systems solutions.
• Demonstrate competency in EMR documentation in the inpatient and outpatient environments.
• Successfully keep track of operative cases and demonstrate competency in documentation of those cases in online case log systems.
• Demonstrate the ability to comply with work hour requirements and document that compliance in a timely fashion.
• Complete evaluations in a timely fashion.
• Participation in at least one value analysis/cost control committee meeting.
Method of Teaching

- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, ICU rounds with ICU intensivists.
- Neurosurgery grand rounds.
- Daily morning rounds.
- Case review/subspecialty teaching conference weekly.
- Specialty neurosurgery conference weekly.
- Neuropathology/neuroradiology weekly.
- Neuro-oncology conference weekly.
- Morbidity and mortality conference monthly.
- Direct faculty observation and supervision of residents in OR.

Evaluation of Residents

- Written faculty evaluation of all 6 competencies every three months.
- 360 degree evaluation of resident by ICU, OR, and floor nurses, as well as clinic staff.
- Written milestones summative evaluation and oral exam at six month intervals.
- Conference and rounds attendance.
- Academic productivity as evidenced by participation in original research projects, case reports, posters, and manuscript preparation.
- Review of inpatient and outpatient documentation patterns.
- Compliance with work hour requirements, medical record completion and participation in practice based learning and systems based practice activities.
- Presentation of the resident portfolio at the 6 month evaluation.

Evaluation of Faculty/Rotation/Program

- Electronic evaluation of the faculty by the resident at three month intervals.
- Yearly electronic evaluation of the program via ACGME resident survey.
- Weekly GME conference where residents have a forum to voice concerns about the program and their educational experience.
- Electronic evaluation of the rotation at either three month intervals or at the end of the rotation, whichever is shorter.
- Written faculty evaluation of all 6 competencies every three months.

H: 2016-2017 Transition to Practice Goals & Objectives. doc
TEACHING CONFERENCES

University of Texas Medical Branch Hospitals
- Daily ward and ICU rounds
- Weekly ACGME Resident- Faculty/ Techniques& Indication Case conference
- Weekly neuro-oncology tumor board/ neuropathology
- Weekly neuroscience grand rounds
- Weekly Case Meeting
- Monthly M&M
- Monthly Journal club
- Quarterly pituitary conference
- Bi-Annual Curriculum Conference

The Methodist Hospital
- Daily ward and ICU rounds
- Neurosurgery grand round bimonthly
- Monthly tumor board
- Didactics/case conference monthly
- Vascular conference every other month

MD Anderson Cancer Center
- Daily ward and ICU rounds
- Monthly M&M
- Weekly preoperative conference
- Weekly neuro-oncology conference
- Biweekly neurosurgery teaching conference
- Weekly grand rounds
- Bimonthly stereotactic spine radiosurgery conference
- Weekly tumor board

Texas Children’s Hospital
- Daily rounds with more senior neurosurgery residents, neurosurgery faculty, the pediatric neurosurgery fellow, PICU rounds with PICU intensivists
- Neurosurgery grand rounds weekly
- Daily morning report
- Case review/ subspecialty teaching conference bi-monthly
- Specialty neurosurgery conference weekly
- Neuropathology/ neuroradiology monthly
- M&M conference monthly

** Formal teaching conferences exist in all participating sites. At UTMB, attendance and participation are monitored and failure of any resident to attend brought up for discussion at the weekly ACGME Resident/ Faculty conference. Teaching conferences at the participating sites are coordinated by their respective program directors. Any failure of participation on the part of the UTMB resident is communicated to the UTMB program director.
Outpatient Facilities
UTMB has well-equipped outpatient facilities for use by neurosurgery. At UTMB these include 1) a large multidisciplinary Outpatient Center, wherein Neurosurgery has three full time exam and consultation rooms, a digital (image) data viewing area, and adjacent administrative rooms for paperwork, communications, receiving and dispositioning patients. The entire clinic facility is open 5 days per week. This Outpatient Center has its own radiology and blood work facility as well as multiple ample waiting room spaces and parking. 2) Victory Lakes – a large multidisciplinary Outpatient Center in League City, wherein Neurosurgery has three full time exam and consultation rooms, a digital (image) date viewing area, and adjacent administrative rooms for paperwork, communications, receiving and dispositioning patients. This new facility is open 5 days per week. Victory Lakes has its own radiology, blood work facility and outpatient surgical areas, as well as multiple ample waiting room spaces and parking. 3) a large emergency room facility, with two helicopter landing areas, 5 trauma bays, distinct adult medical, surgical, and pediatric component examination and treatment areas, as well as a lab for urgent blood work and a radiology area that includes a 64- slice CT scanner. 4)The Texas Department of Criminal Justice Hospital (TDCJ) on the UTMB campus houses a separate clinic used on Wednesday by the Galveston neurosurgery residents. This clinic is supervised by the Neurosurgery Faculty. The facility has elaborate security capabilities and is time-shared with other surgical specialties. Patient attendance and access to medical records is assured by an elaborate administrative, communication and transportation system linking it to the many separate prison facilities throughout the State of Texas which collectively has an inmate population exceeding 100,000. In addition to the patients who are transported to this clinic, there is an ongoing major investment and advanced capability in telemedicine that provides an exceptional opportunity to the resident in an especially appropriate setting linking the main TDCJ hospital clinic with the many separate prison infirmaries, located across the State.

Inpatient Facilities
The Jennie Sealy Hospital (310 beds), John Sealy Hospital (350 beds, but currently undergoing remodeling, so this number will fluxuate), League City Campus Hospital and the Texas Department of Criminal Justice-Galveston hospital serve as the primary inpatient facilities for the care of neurosurgery patients. UTMB has invested $438 million in the building of the new Jennie Sealy Hospital, which includes 765,000 square foot with 12 floors (with a 25 foot elevation above sea level). This includes 60 ICU rooms and 20 operating suites with intraoperative MRI and 28 day surgery rooms. A partial listing of inpatient services available at UTMB is listed below by categories.

UTMB Radiology facilities have been recently updated. They include:

a. four MRI scanners, two of which (at John Sealy Hospital) are late model GE with capacity for functional and spectroscopy. A third MRI scanner is a late model Siemens (at Rebecca Sealy Hospital across the street from John Sealy).
b. Four new GE “spiral” CT scanners, two of which are typically occupied with cranial studies.
c. Separate additional ER 64- slice GE CT scanner for urgent and trauma evaluations, and for CT angiography.
d. Philips Mobile CT scanner for Intra-operative use by the neurosurgery service.
e. Diagnostic and Interventional Angiography Suites.
f. Many intra-operative fluoroscopy units.
g. Intraoperative ultrasound.
h. Frameless stereotaxy capability, as well as framed stereotaxy.
Information Technology Services are now a major feature of the neurosurgery inpatient and outpatient landscape. Networks are present providing digital image data to the neurosurgery offices, Operating room and outpatient clinics. UTMB has “gone filmless”- as essentially all images are available in an organized format from centralized servers. Films now are only sometimes printed for OR use and increasingly common is viewing of digital data on neuro-navigation units.

UTMB Operating Room Facilities: There are currently 20 operative rooms in the main Jennie Sealy Hospital.

Pathology: Full complement of diagnostic lab services.

- Surgical pathology facility adjacent to the Main OR areas at John Sealy Hospital
- Cytology
- Autopsy service

Three subspecialty neuropathologists on faculty,(Drs Campbell, Gelman and DiPatre).

Radiation Oncology: Full radiation oncology activities, including stereotactic radiosurgery, are available at UTMB, and radiation oncology will be available at Victory Lakes within the next year.

Research Facilities

There are extensive research facilities on the UTMB campus with separate whole buildings dedicated to Pharmacology, Basic Sciences, Clinical Sciences, Anatomy and Pathology, and more. The Division of Neurosurgery has dedicated to it about 1100 square feet of wet bench lab space in the separate Surgical Research Building adjacent to the main hospital. In addition to animal surgical and animal care facilities that are part of the surgical research building, many types of equipment are available including “gene Chip” cDNA array analysis, Northern, Western Blot, tissue culture, HPLC, many types of microscopy (including Macro, fluoro and confocal).

For the clinical projects, there is an IRB and a separate inter-department service (GCRC) for conducting clinical trials with “time-shared” study coordinators experienced in compliance with protocols and data gathering. This service can make possible participation in trials that otherwise would not support a study coordinator because of highly selective admission criteria and expected small patient accrual.

The UTMB Department of Surgery maintains a “manuscript office” for help with the production aspects of articles for publication, and grant writing. On campus there are basic artist, graphic design and advanced photography services available on a contract or per job basis.

There is an institutional office of sponsored programs that assists with application for and administration of outside funding. UTMB has internal funding available (through the Sealy-Smith and Moody Foundations as well as through institutional grants) on a competitive basis for pilot and small projects.
## SURGICAL NEUROSURGERY

The “Main” Operating Room facility at Jennie Sealy Hospital of UTMB has 20 rooms running every day. Neurosurgery has “block time” dedicated to it in the main assigned OR 16 three days of the week and a second room is available two days a week. In addition, urgent cases are done on a space available basis in additional rooms. At UTMB, the Main Neurosurgery Room (OR 16) is equipped with Network access, Intra-operative CT, latest BrainLAB cranial and spinal neuro-navigation, Fluoro-navigation, Radionics framed stereotaxy for both biopsy and functional work, physiological monitoring (including SSEP, Cortical mapping, BAERs, Facial nerve, peripheral nerve stimulation and recording, deep brain stimulation, recording and lesion making) in addition to the basic varieties of drills, microscopes, CUSA, and video for monitoring by nursing, guests and medical students.

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Additional space available as needed.

At UTMB, one faculty and one resident conduct almost all cases. Only occasionally do residents assist each other. Furthermore, almost all cases at UTMB are conducted with resident participation. The faculty almost never works alone. Residents are permitted to do some parts of surgery alone or with intern, medical student help, although the Faculty is always immediately available for all parts of surgery if needed by the resident surgeon. The faculty is present in all cases for the “key” parts of each procedure.

### Progressive responsibility

The program clearly provides progressively responsible patient management opportunities at each level of training. Beginning with the PGY2 year, the resident takes first line responsibility for NCCU, SICU and Ward patients, and for emergency consultations. He/she communicates extensively with upper level residents and faculty in the process. Here, often the resident “doesn’t know what to do”, but communicates problems and learns appropriate responses and countermeasures through discussion with higher-level residents and faculty. He/she then carries these out and learns from consequences. In the PGY3 year, the resident learns decision-making related to extracranial cerebrovascular disease and begins to assume more operating room duties while on the vascular surgery service. For those residents interested in pursuing an academic career, flexibility is built into the PGY3 year for the resident to pursue and independent research project. In the PGY4 year, the resident spends a large percentage of his time in the operating room assisting with a wide range of cases during their Houston rotations. Knowledge of surgical techniques expands and enables progressive independence. Also, in the PGY4 and PGY5 years, there is an emphasis on pre and post-operative management with progressive independence as the resident anticipates more and more, and the faculty expect him/her to not only describe a problem, but to have a plan for dealing with it—which is then approved or rejected or modified. The most obvious progress toward independence comes after returning to UTMB in the PGY5 year, when the resident assumes responsibility not only for a list of patients already under management, but for an entire practice. The chief resident assumes first line responsibility for the TDCJ hospital and outpatient practice. He/she must field problems as they present through in-hospital consultations and
through the outpatient clinic. He/she carries the patient from start to finish through initial visit, investigation, operative versus conservative treatment decision making, pre-operative preparation, surgery, post-operative care and subsequent clinic follow up. The TDCJ has some unique aspects that include telemedicine, guaranteed treatment compliance, and follow-up. It also provides an education in hidden agendas, frank malingering, in addition to the usual lessons in doctor patient relationship development, and interaction with dysfunctional families. The PGY6 resident truly has the best possible opportunity to be the patient’s “doctor.” The faculty remains highly involved with the decision making, assessment, and conduct of surgery, but make every effort to keep the resident in the primary role. At this stage, the resident really feels he has patients of his own, and begins to feel globally and primarily responsible for them. Faculty are always available to discuss patient care issues with residents, regardless of their level of training. They can be reached by cell phone and/or pager. Faculty are notified of patient admissions, transfer to the ICU for higher levels of care, planned interventions such as central venous lines, and end-of-life care. DNR and withdrawal of care orders must be cosigned by faculty as per hospital policy.

Outpatient responsibility

The PGY2 resident has responsibility for outpatients that present through the ER. He/she is also involved as far as other duties allow, in the ER follow-up clinic. The PGY2 resident does participate on a sporadic basis assisting in the Chief Resident’s personal clinic, and in the faculty clinics but his/her primary elective outpatient duty is with the pre-operative work ups and with the early post op visits for suture removal and wound checks. His/her involvement in the pre-op work ups helps establish continuity for the coming inpatient care, and he/she at least has the opportunity to observe the early post-op course during the inpatient and early outpatient visits. In the PGY3 year, the outpatient experience includes the vascular surgery service and here the emphasis is specifically on the investigation and pre-operative decision making related to extracranial vascular disease. The resident is expected to participate in a supervised vascular surgery clinic that also sees post-operative patients. In the PGY-4, PGY-5, & PGY-6 year the outpatient neurosurgery practice derives from the 100,000 plus covered lives in the TDCJ and the John Sealy Hospital neurosurgery service. This encourages a growing independence in management skills under the supervision of the neurosurgery faculty. There is a sense that this is the resident’s “own” practice. This year also includes a significant experience with telemedicine. The residents definitely has a major opportunity to carry the patient through initial consultation, investigation, surgical decision making, surgery scheduling time, operative conduct, post-op care, and outpatient follow-up.
**Critical care goals**

The neurosurgery resident has an intense training in NCCU care. Beginning in the internship year, the resident does a special three month surgical NCCU rotation under the direction of the NCCU faculty. During this rotation the resident is expected to understand the basics of airway and ventilator management, fluid and electrolyte balance, nutrition maintenance, pulmonary embolism prophylaxis, cardiac and circulatory support, coagulation function regulation, pulmonary and systemic infections, respiratory failure, as well as some service-specific management issues. The PGY1 resident is also intimately involved in the NCCU care of neurosurgery patients during their months rotating on neurosurgery.

In the **PGY2 year**, the resident is given first line responsibility for the neurosurgical ICU patients. He/she spends a significant part of each day tending to the NCCU patients. This care is monitored twice daily on rounds with the senior resident and Chief resident, and approximately once daily by the Faculty. The progress of each resident’s ICU care understanding is monitored formally each year in part by the performance of the resident on the general clinical skills section of the primary examination of the American Board of Neurological Surgery, which is taken yearly by each resident.

The primary or ultimate responsibility for NCCU care of neurosurgical patients remains with the faculty neurosurgeon, although that faculty surgeon is free to obtain whatever help he/she feels necessary from the NCCU faculty on call that month. In the remaining training years, the resident maintains NCCU experience through contact from daily rounds (which begin each day in the NCICU), and by covering the Neurosurgical NCCU patients during on call periods and/or by serving as chief resident and supervising the junior residents care.
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** Please note - no PGY-4 for this year

**Residents are allowed 12-15 vacation days (depending on years of service) per year. UTMB has 13 holiday days per year. Residents working holidays will receive 1 day for working the holiday. Residents take vacation holiday when requested. Only 1 resident can take vacation at a time & it must be approved by Resident Coordinator & Program Director.**
The decision to admit a patient will generally be made by faculty, the chief resident, but may be initiated by a resident at any level. The decision to admit a patient is to be approved by a faculty member. Once a patient is admitted, the resident will perform an admitting history and physical examination, and will plan and implement the diagnostic evaluation, surgical procedure and post-operative care.

A faculty member will supervise the resident, and liberal discussions concerning the best therapy will be held. Likewise, faculty and residents will discuss the best treatment of any possible complications, in order to provide the best education and patient care.

Residents are expected to perform continuity of care for our patients regardless of whether they are in-patients, out-patients, private, or non-private. Residents are on call nights and weekends, in accordance with ACGME guidelines. As noted above, they are responsible for organizing and performing pre-operative and post-operative care. Post hospitalization care, clinic follow-up, and emergency/urgent care should such be necessary, are provided by the residents with faculty supervision.

Due to the small size of the training program, the Program Director and the rest of the faculty interact frequently with the residents. Supervision is direct and daily. In addition to daily patient communication between the program director and residents, time is set aside daily for additional communication process, should the resident or program director desire. Close supervision affords the luxury of tailoring the resident’s projects to his/her own pace so that progression of responsibilities can proceed on an individual basis.

During the rotation that takes place at The University of Texas Medical Branch Hospitals, the clinical team consists of the chief resident, PGY3, PGY2 and PGY1 residents, along with a PGY-1 rotating resident, as well as 2-3 third and fourth year medical students. This team cares for all the inpatients simultaneously.

The program director, in conjunction with the chief resident, is responsible for the assignment of reasonable duty hours. The neurosurgery division requires that each resident enter their time into the New Innovations system daily. The Program Coordinator is responsible for ensuring that time is entered in a timely manner and that all residents are compliant with the ACGME work hour regulations.

**TRANSITION OF CARE**

In an effort to improve the continuity of care for our patients, the Neurosurgery service designed and implemented an intra-disciplinary system for exchange of patient information between residents. During the development phase of this system, shared resident goals included clear, efficient, and easily referenced transfer of patient information from residents leaving service to those coming on. To fulfill these goals sign-out information specifically includes, in an organized and shared electronic medical record format, the following: patient identifiers (name, date of birth, gender, Medical Record Number, and room number); attending physician; duration of hospital stay; pertinent 24-hour vitals, labs and images; mechanism of injury; points of follow-up care; surgical details (date planned or completed, procedure name and site, and post-operative complications); and disposition. This method of care transfer has qualitatively shown to decrease medical errors via an easily referenced patient overview, to shorten hospital stays through better coordination of in-house follow-up care, and thus to improve patient satisfaction.
FACULTY INTERACTIONS WITH RESIDENTS

It is the policy of the Residency Training Program in Neurological Surgery that faculty members are rapidly available to residents 24 hours a day.

During the performance of all anesthetic surgical or invasive procedures, a faculty member will be in the immediate vicinity or present for the procedure.

During all outpatient clinics and procedure clinics, faculty members will be available for consultation as necessary and will provide oversight for all clinical activity.

A call roster of faculty members is available allowing 24-hour access to faculty through both telephone numbers and pagers.

ETHICAL AND LEGAL RESPONSIBILITY OF THE PATIENT'S CARE

The ethical and legal responsibility of the patient’s care rest with the faculty physician, in the case of both the sponsored patients, and unsponsored patients. That physician must be cognizant of any changes in the status of patients for whom he/she is responsible, and must be informed when there is a change in a patient’s condition or when a change in therapy is considered. The residents are expected to make faculty aware of significant changes in a patient’s condition.

MOONLIGHTING

Moonlighting and/or internal electives (ER) by neurosurgery residents is strictly forbidden in compliance with Department of Surgery policy. In addition, moonlighting will be considered grounds for immediate termination of position and employment.

DRESS AND CONDUCT

It is required that all members of the House Staff present a neatly groomed appearance with a white coat.

Remember to have regard for the patient’s feelings and to treat each patient as you would want to be treated if you were a patient. Condescending attitudes are to be strictly avoided.

Nurses are our professional colleagues. It is important to establish and maintain good relationships with the nursing staff; they are vital members of our team, upon whose help our patients depend. Remember to express appreciation of a job well done to all.
CLINICAL SUPPORT SERVICES

Clinical Pathology

Stat Laboratory Requests

The Clinical Laboratories receive several hundred emergency requests each day. If is not possible for the laboratory to expedite that many procedures, so there must be priorities. The physician ordering these tests must keep this in mind and only request “stat” laboratory studies when absolutely necessary.

Routine Laboratory Requests

Careful planning on the part of the physician will result in most, if not all, of blood for laboratory test being drawn at one time in the morning, but the most skilled personnel, with the least discomfort to the patient. Careful planning will also diminish the incidence of duplication of laboratory tests, which contributes significantly to the cost of hospitalization, whether the cost is borne by the patient, a third party, or the hospital.

Radiology

A request for an x-ray is really a request for consultation from the radiologist. Therefore, providing essential medical information and clinical diagnosis on the request is an important as supplying similar information on a consultation request. Direct communication with the radiologist consultant can often facilitate this process to the benefit of the patient. The completion of a x-ray request must not be delegated to the Ward Clerk.

Similarly, this responsibility should not be delegated to the student unless the student has been made privy to the reason for the request and the clinical diagnosis as perceived by the physician.

A stat request for an emergency radiologic service should be made only when absolutely necessary. Such requests interrupt the schedule in the Radiology Department and may lead to needless delays of a scheduled study. The Radiology Department assures us that if a radiological study is needed within the same day as the request, they will assure its performance if the Chief Technologist or his Assistant is notified of the request. One of the individuals is available in the department throughout the day and should be readily reached. As our consultant, the Radiologist evaluates the required studies with great expertise, and all of the previous films on the patient must be available for reference. It is, therefore, the Physician’s responsibility to return films to the film room as rapidly as possible, certainly within 24 hours. X-ray films should not be left in the operating suite, as they are frequently misplaced. With the arrival of the PACS system, films are now readily available. If a patient is scheduled for surgery, please notify the film room that hard copies of the films are needed for surgery.

Blood Donors

All members of the Surgical Staff must assume a responsibility of acquiring blood donations. When a patient is scheduled for elective admission and surgery, that patient should be asked to solicit two blood donors. If the patient’s general health warrants, he/she should be encouraged to join the Blood Assurance Program by donating a unit of blood.
EDUCATION

Student Teaching Responsibilities

Teaching is a responsibility of all House Staff and Faculty Members. Students should be made to feel a part of the “team”. House Officer recruitment begins with this early exposure of the students to the House Staff and Faculty. The Senior Resident on each service is designated as the Teaching Resident for the clerkship students and lower level residents. He/she will also check the progress notes written by the students and assure that all notes are correct and signed by a licensed M.D.