Family Medicine Residency
Neurology Rotation
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Rotation Goal

The goal of the neurology curriculum is to sensitize the family medicine resident to neurologic disease and familiarize residents with its particular place in the overall practice of family medicine in inpatient and outpatient settings. Neurologic problems are estimated to comprise 10 to 15 percent of a family physicians workload. History-taking in neurology and performance of the neurologic examination are essential skills. Good diagnostic and therapeutic skills and appropriate consideration of biopsychosocial factors will be emphasized in this rotation. The resident will have the opportunity to diagnose and manage, under supervision, patients with neurologic disorders as well as those with signs and symptoms possibly referable to the nervous system.

This rotation provides the resident with the opportunity to work one-on-one with a subspecialty attending, with the goal of obtaining competence in the diagnosis and management of commonly occurring neurological disorders as well a patient stabilization in neurological emergencies. The neurology subspecialist preceptors are from the Semmes Murphy Clinic. They primarily serve adult and some adolescent patients. Please refer to the Residency Master schedule for the days you are scheduled to work with one of the following preceptors at the Semmes-Murphy Clinic. On the week prior to the start of this rotation, you should call the Semmes-Murphy Clinic to find out the daily schedules for the preceptors so you will know who you will be working with each day. If you have any specific problems, questions, or concern regarding this rotation, please discuss these with the faculty rotation coordinator.

Neurology topics are also incorporated into the noon conference schedule and various mini-seminars. Residents gain additional experience with neurological disorders while on the inpatient medicine service and from outpatient encounters during scheduled clinic times at UT Family Practice Center. During your outpatient pediatrics rotation and various other times during this residency program, you will be assigned to work with a pediatric neurologist to gain further experience in various pediatric neurologic disorders. You will also be exposed to a variety of pediatric neurologic pathology as well as be taught to recognize variations of normal neurologic development during your inpatient pediatrics, NICU, and outpatient pediatrics rotations.

Rotation Goals:

- Review diagnosis, management, and appropriate referral criteria for common neurologic problems in adult and pediatric patients
- Learn how to help patients and their family members adjust to acute or chronic neurologic illnesses that may significantly affect daily life and family function.
- Learn how to maximize neurologic function through the control of environmental factors, management of disease and preventive care.
- Learn how to minimize deterioration of neurologic function through the initiation of appropriate treatment, including rapid referral when necessary.
- Learn when social/psychological intervention is appropriate in patients with neurologic dysfunction.

Supervision

Direct observation is provided by precepting physicians. Precepting physicians include Karl Misulis M.D., Thomas Head M.D., and Mike Bruggeman M.D.,.

Rotation Objectives

By the end of the Neurology rotation, PGY I residents are expected to expand and cultivate skills and knowledge learned during previous training and to achieve the following objectives based on the six general competencies. The resident should exhibit an increasing level of responsibility and independency as he or she progresses throughout the year.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	**SPECIALTY SPECIFIC OBJECTIVES**			
	Develop a humanistic and compassionate approach to care of the patient with neurologic disease, especially in the case of patients with chronic disorders.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Discuss the importance of family, home, and social support in the overall life of patients with neurologic disease.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop skills that allow for compassionate, appropriate and effective care of pediatric and adult patients with neurologic illness and dysfunction while integrating evidence-based medicine and local standards of care.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Provide support for the patient through the process of consultation, neurologic evaluation, treatment, rehabilitation and long-term care	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Identify the role of the neurology consultant and implement the concept of shared care for certain neurologic conditions.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Recognize and define the neurologic problem	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly

	Elicit a comprehensive history and perform a complete neurologic and mental status examination, Glascow coma scale and pediatric developmental exam	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Localize the lesion and generate a differential diagnosis	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Assess the acuity and prognosis of the clinical problem as it relates to the need for immediate management and the requirement for expert assistance	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Formulate a rational plan of further investigation and management	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Formulate a diagnostic and management plan and assessing the need for expert advice with an awareness of the risks, benefits and costs of this evaluation	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Under direct supervision, perform lumbar puncture and interpretation of CSF fluid studies (minimum of 3).	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Manage the prevalent and treatable conditions listed under "Medical Knowledge," with consultation as appropriate	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Manage emergent neurologic problems and obtaining urgent consultation when appropriate, including:	Conferences/Didactics Daily Rounds	Direct Feedback Global Evaluation	Daily Monthly

	1. Stroke 2. Coma 3. Meningitis and Encephalitis 4. Status epilepticus 5. Central nervous system trauma 6. Increased intracranial pressure 7. Acute visual loss 8. Rapidly progressive neurologic deficit 9. Neurologic respiratory failure 10. Acute weakness 11. Altered mental status	Research Discussions Self Directed Learning	Procedure Certification In-training Exam Pre and Post Test	Quarterly Annually Monthly
	Manage family and psychosocial issues that accompany the long-term care of patients with debilitating neurologic conditions, including home and community care, the utilization of community resources, the use of a multidisciplinary team and the primary role of the family physician as coordinator of long-term care	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Consider potential drug interactions and adverse drug effects, especially in elderly patients	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
Medical Knowledge	**SPECIALTY SPECIFIC OBJECTIVES**			
	Develop an understanding of the role of a neurologic specialist and the implications of special testing in patients with neurologic disease and the implications to the patient of test results	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop adequate knowledge of common disorders of the neurologic system as managed by board certified subspecialists in neurology.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop an in-depth knowledge of normal anatomy, physiology and anatomic principles that allow localization of neurologic disease; and the normal growth, development and senescence of the nervous system	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam	Daily Monthly Quarterly Annually

			Pre and Post Test	Monthly
	Develop a basic understanding of the following pathologic neurologic disorders including: 1. Disorders of motor function a. Upper and lower motor neuron disorders b. Incoordination c. Movement disorders i. Hypokinetic A. Parkinson's disease B. Parkinson plus syndromes ii. Hyperkinetic A. Athetosis B. Chorea C. Dystonia D. Tics E. Tremor 2. Disorders of sensation a. Central b. Peripheral 3. Disorders of vision a. Visual field defects b. Monocular and binocular blindness c. Diplopia and gaze palsies d. Nystagmus e. Pupillary abnormalities 4. Cerebrovascular diseases a. Ischemic stroke i. Thrombolytics A. Indications and use B. Risks and benefits b. Hemorrhagic stroke c. Vasculitis d. Transient Ischemic attacks e. Symptomatic/asymptomatic carotid stenosis f. Aneurysmal disease	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly

	5. Head and spinal cord trauma a. Evaluation b. Management c. Consequences 6. Multiple sclerosis a. Diagnostic criteria b. Laboratory findings c. Management 7. Dizziness and disorders of hearing a. Central vs. peripheral hearing loss i. Acute ii. Chronic b. Central vs. peripheral vertigo i. Acute ii. Chronic iii. Evocative testing (e.g., Hallpike maneuver) c. Tinnitus 8. Disorders of higher cognitive function & communication a. Dementia i. Differential diagnosis ii. Evaluation iii. Management b. Encephalopathy (acute, chronic) i. Toxic ii. Metabolic c. Aphasia, apraxia 9. Disorders of consciousness a. Syncope b. Epilepsy i. Generalized at onset seizures ii. Simple partial seizures iii. Complex partial seizures iv. Treatment A. Management with anticonvulsant medications B. Surgical management C. Vagal nerve stimulator c. Recognition and treatment of increased intracranial			

	pressure d. Stupor and coma i. Toxic, metabolic ii. Structural disease iii. Herniation syndromes e. Brain death 10. Headache a. Migraine and variants b. Cluster headache c. Tension-type headache d. Headache associated with a structural lesion e. Benign intracranial hypertension (pseudotumor cerebri) f. Chronic daily headache g. Emergent headaches i. Subarachnoid hemorrhage ii. Meningitis iii. Giant-cell arteritis/temporal arteritis 11. Brain tumors a. Anterior or posterior fossa i. Primary A. Benign B. Malignant ii. Metastatic 12. Infections (meningitis and encephalitis) a. Bacterial b. Viral or retroviral (human immunodeficiency virus) c. Fungal d. Tuberculosis e. Prion disease 13. Spinal cord disorders a. Anatomy and localization b. Extrinsic compressive lesions c. Intrinsic lesions 14. Sleep disorders 15. Disorders of peripheral nerve, neuromuscular junction and muscle a. Muscular dystrophy			

	b. Peripheral neuropathy c. Mononeuritis multiplex d. Myopathy e. Guillain-Barre syndrome f. Myasthenia gravis g. Plexopathy h. Radiculopathy i. Diagnostic studies (e.g., nerve conduction velocity, electromyograph, muscle biopsy) 16. Congential disorders a. Brain and spinal cord malformations i. Arnold-Chiari malformation ii. Meningomyelocele iii. Cortical malformations 17. Chromosomal abnormalities, (e.g., Down's syndrome) 18. Abnormal head growth a. Microcephaly b. Macrocephaly (including hydrocephalus) 19. Aberrant development a. Development delay b. Mental retardation c. Neurodegenerative diseases 20. Developmental disorders of higher cerebral function a. Mental retardation b. Developmental language disorders c. Learning disabilities (e.g., dyslexia) d. Attention deficit disorder, also ADHD e. Pervasive developmental disorders (e.g., autism) 21. Psychiatric disorders mimicking neurologic disease a. Non-epileptic spells (e.g., pseudoseizures) b. Dementia of depression (e.g., pseudodementia) c. Conversion disorder d. Malingering e. Disorders of somatization and hypochondriasis			
	Utilize the principles of pain management, pharmacologic agents, and surgical management in the treatment of patients with neurologic disease	Conferences/Didactics Daily Rounds Research Discussions	Direct Feedback Global Evaluation Procedure Certification	Daily Monthly Quarterly

		Self Directed Learning	In-training Exam Pre and Post Test	Annually Monthly
	Formulate preventive strategies for neurologic disease	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Apply knowledge of neurologic complications of systemic illness to patient care	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop a basic understanding of the neurologic disabilities of elderly patients, and the importance of assessing, restoring and maintaining their functional capacity	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop a basic understanding of the genetic basis of certain neurologic disorders as they affect the patient and family and education of the family regarding the benefits of genetic counseling	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Apply knowledge of the psychologic and rehabilitation aspects of patient management, especially for chronic or long-term neurologic conditions to patient care	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Develop the basic knowledge of the indications, contraindications, risks and significance of ancillary tests including: a. Lumbar puncture and its performance b. Electroencephalogram c. Visual, brain stem auditory and somatosensory evoked potentials d. Nerve conduction study and electromyography e. Muscle and nerve biopsy	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly

	f. Computed axial tomography with and without contrast g. Magnetic resonance imaging with and without contrast h. Magnetic resonance angiography i. Angiography j. Myelography k. Carotid ultrasound l. Sleep study m. Genetic testing n. PET scanning o. SPECT scanning			
Practice Based Learning and Improvement	**SPECIALTY SPECIFIC OBJECTIVES**			
	See General Family Medicine Objectives for a comprehensive list.			
	Develop tools to help meet the needs of patients	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Recognize own level of competence in handling neurologic problems and the need for further consultation as appropriate.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Incorporate evidence based medicine and resources into the care of neurological problems.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Review current literature relevant to the care of individual patients and the community. (Write summary of journal article as it relates to Family Medicine)	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification Summary of Article Pre and Post Test	Daily Monthly Quarterly End of Rotation Monthly
Interpersonal and Communication Skills	**SPECIALTY SPECIFIC OBJECTIVES**			
	See General Family Medicine Objectives for a comprehensive list.			

	Communicate effectively with patients and their families while in the presence of their daily preceptor.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Convey information in a clear and concise manner to patients, families, and other health professionals (i.e., use appropriate vocabulary choice, realistic outcomes, and working with difficult patients and family)	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
Professionalism	**SPECIALTY SPECIFIC OBJECTIVES**			
	See General Family Medicine Objectives for a comprehensive list.			
	Provide compassionate and high quality care to all patients regardless of gender, age, culture, race, religion, disabilities, sexual orientation or socioeconomic class	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Determine best methods for consultation of subspecialty physicians while caring for the neurological patient	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Behave in a professional manner when interacting with patients or other health care providers.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
Systems-Based Practice	**SPECIALTY SPECIFIC OBJECTIVES**			
	See General Family Medicine Objectives for a comprehensive list.			
	Develop an understanding of the appropriate role of subspecialty medicine in evaluation and treatment of neurologic disorders and when a neurology consult is warranted.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Incorporate considerations of cost awareness and risk-	Conferences/Didactics	Direct Feedback	Daily

	benefit analysis in patient care	Daily Rounds Research Discussions Self Directed Learning	Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Monthly Quarterly Annually Monthly
	Advocate for quality patient care and optimal patient care systems	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification In-training Exam Pre and Post Test	Daily Monthly Quarterly Annually Monthly
	Critique the benefits of inpatient versus outpatient rehabilitation services	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification Review of rehab program Pre and Post Test	Daily Monthly Quarterly End of Rotation Monthly
	Evaluate the positive and negative effects of rehabilitation after a cerebrovascular accident including cost effectiveness and long term patient outcomes. Compare findings to current hospital system.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification Review of rehab program Pre and Post Test	Daily Monthly Quarterly End of Rotation Monthly
	Recommend solutions for lower hospital and rehab costs without compromising patient care.	Conferences/Didactics Daily Rounds Research Discussions Self Directed Learning	Direct Feedback Global Evaluation Procedure Certification Review of rehab program Pre and Post Test	Daily Monthly Quarterly End of Rotation Monthly

Educational Resources

1. Merritt, H.H., and Rowland, L.P. 2000 Textbook of Neurology. Tenth Edition. Philadelphia, PA: Lippincott, Williams and Wilkins.
2. Victor, M., et. al.. 2000. Adams and Victor's Principles of Neurology. Seventh Edition. McGraw-Hill.
3. Bradley, W.G. et al., 1999 Neurology in Clinical Practice. Third Edition. Butterworth-Heinemann.
4. Patten, J., 1996 Neurological Differential Diagnosis, Second Edition. Springer.
5. Samuels, M.A. 1999 Manual of Neurologic Therapeutics. Sixth Edition., Lippincott, Williams & Wilkins.
6. Weiner, W.J., Goetz, C.G. 1999 Neurology for the Non-neurologist. Fourth Edition. Lippincott, Williams & Wilkins.
7. Wilkinson, J.L. 1998 Neuroanatomy for Medical Students. Third Edition. Butterworth-Heinemann.
8. Kandel, E.R., et al. 2000 Principles of Neural Science. Fourth Edition. McGraw-Hill.
9. DeJong, R.N., Mcgee, K.R. 1992 The Neurologic Examination. Fifth Edition. Harper & Rowe.
10. Gelb, D.J. 1995 Introduction to Clinical Neurology. Butterworth-Heinemann.
11. Plum, F., Posner, J.B. 1980 The Diagnosis of Stupor and Coma. Third Edition. F. A. Davis & Co.

12. Simon, R.S. et al. 2000 Clinical Neurology. Fourth Edition. Lange Medical Books, McGraw Hill.

Websites

1. AAN: http://www.aan.com
2. E medicine Neurology: http://www.emedicine.com/neuro/index.shtml
3. Neuromuscular Disease Center: http://www.neuro.wustl.edu/neuromuscular
4. Whole Brain Atlas: http://www.med.harvard.edu/AANLIB/home.html
5. www.uptodate.com (available free through www.utdol.com in Jackson General Hospital based computers)
6. www.epocrates.com