I. Educational Purpose and Goals: The purpose of this rotation is to provide a core of clinical knowledge and skills in neuroscience for internal medicine residents. Internists must be able to evaluate and assess patients with neurologic complaints. Residents are therefore expected to competently obtain neurologically-oriented history, perform a neurological examination and localize a lesion, formulate a differential diagnosis for the lesion, understand the basic laboratory and imaging evaluation of the neurological lesion, and understand the pathophysiology and natural history of common neurological conditions. In this rotation, residents will be exposed to a variety of problems that are frequently seen by internists will learn about diseases more frequently seen by subspecialty neurologists.

II. Principal Teaching Methods:
1. Supervised Direct Patient Care Activities: Residents evaluate and manage neurology patients at Medical Center Hospital (MCH) and Midland Memorial Hospital (MMH) attended by physicians on clinical faculty at both institutions, including patients admitted to these neurologists and patients referred to these physicians for neurology consultation. In addition, residents will participate in patient evaluation and care in the outpatient neurology clinics of supervising clinical faculty. In the inpatient setting, each patient evaluated by the internal medicine resident will be seen with the neurology attending during daily management rounds. All patients evaluated by the resident in the clinic will be subsequently evaluated with the neurology faculty. Thorough assessment will be performed and a management plan will be formulated by the resident and discussed with the neurology attending. In the hospital setting, the rounding team will consist of the attending and the rotating Texas Tech resident(s).

2. Teaching Rounds: Teaching rounds will occur after patient encounters in the hospital and during clinic period. Patients will be seen and examined by the residents, who will formulate a hypothesis and a treatment plan and present it to the attending faculty. Both the resident and the attending will examine the patient and discuss the patient’s care and the resident’s assessment.

3. Didactic Lectures: Neurology lectures are part of the Core Curriculum series of the Department of Internal Medicine. Residents on Neurology rotation are required to attend all of the Core Curriculum lectures.

4. Self-study: All residents are expected to read independently about patients seen in the hospitals and in clinics, on pulmonary topics assigned by faculty, and in preparation for core curriculum lectures.
III. **Educational Content**

1. **Patient Characteristics:** Patients are admitted from Ector and Midland county area, as well as surrounding West Texas counties. Patients encountered reflect the diverse nature of pathology present in the area with equal exposure to men and women of multiple ethnicities and socioeconomic backgrounds. Similar population sources are reflected in the outpatient neurology clinics. Patients seen by the residents range from young adolescents with mild neurological problems to elderly patients with advanced diseases.

2. **Disease Mix:** Diverse acute and chronic neurological conditions are encountered both as admissions and as consults, representing neurological problems seen in common clinical practice.

3. **Learning venues type of clinical encounters, and services:** The inpatient component of the neurology rotation is based at Medical Center Hospital in Odessa and Midland Memorial Hospital, both serving as major referral centers for West Texas residents. Residents work with neurology clinical faculty at both facilities. Residents perform rounds in the hospital, where they admit patients and see new consults. Residents gain valuable insight into the indications, contraindications, and performance of commonly ordered neurology-related tests. Cost-effective health issues are regularly addressed in this setting. The evaluation and care of patients with neurological problems in the outpatient setting is performed through resident’s participation in the outpatient clinics of the supervising neurology faculty.

4. **Procedures:** The resident is introduced to techniques used in clinical neurology. Residents will reinforce or learn indications as well as techniques for lumbar puncture. They will review and learn the indications for and interpret the results of the following tests: CSF analysis, carotid and vertebro-basilar Doppler studies, CT angiography and MRI, MRA, EMG and nerve conduction studies, EEG, and metabolic and toxic blood evaluations.

5. **Structure of rotation:** All clinical work is at a community neurologist’s office and either at MCH or MMH hospitals. The clinical neurologist will determine the time the resident is to be at his office or at the hospital. The resident’s daily schedule includes daily work rounds, teaching sessions and lectures with clinical faculty, as well as the mandatory residency conferences. Residents continue to attend their continuity clinics and mandatory didactics.

IV. **Principal Ancillary Educational Materials:**

a. At the beginning of the rotation, each resident receives a copy of the Neurology curriculum’s Goals and Learning Objectives.

b. Readings from recent and classic neurologic journal literature are given to residents for discussion with attendings.

c. Five texts are suggested: Neurology for the House Officer, Principles of Neurology, Harrison’s Principals of Medicine, and Manter and Ganz Neuroanatomy.
V. **Methods of Evaluation:**

1. **Resident Performance:** Neurology clinical faculty complete written resident evaluation forms provided by the Internal Medicine Residency coordinators. The evaluation is competency-based, and uses a detailed assessment of resident’s effort, progress and achievement on each core competency component. Faculty review the written evaluation in person with each resident and provide detailed feedback on resident’s performance. In addition, the following sources and methods of evaluation are included in assessing residents performance: a) mini- CEX and CEX. b) all other (verbal, written) evaluation comments provided to the Program Director/Associate Program Director by faculty and community physicians interacting with the resident during Neurology rotation are documented in writing. f) performance on the periodic Neurology exam administered as part of the monthly subspecialty exams. All evaluations are available for resident review (excluding direct review of evaluations completed by resident colleagues). All evaluations are part of the resident file and are incorporated into the semiannual performance review of directed resident feedback.

2. **Procedures:** Residents submit documentation of any procedures performed during the rotation, on a hard-copy form, completed by supervising faculty. Procedure forms include supervisors’ evaluation of resident’s performance.

VI. **Rotation Specific Competency Objectives**

1. **Patient Care**

   I. Residents should demonstrate ability to apply clinical skills and use the physical examination to localize neurologic lesions. By the end of the rotation, the resident must be able to complete a comprehensive history and must develop the ability to perform a competent neurological examination, including:
   
   a. Mental status: language, memory, attention/concentration, affect, intellect
   b. Cranial nerves
   c. Motor exam including details on bulk, strength and tone
   d. Reflex exam including stretch and pathological reflexes
   e. Coordination and gait and balance

   II. The resident will demonstrate ability to develop a rational clinical approach to solving basic clinical neurological problems including:
   
   a. Stupor and coma
   b. Seizures
   c. Tremor
   d. Weakness
   e. Dizziness, syncope
   f. Vertigo
   g. Sensation changes
   h. Dementia and delirium
   i. Paralysis
   j. Headaches
   k. Changes in vision or other sensory organs

   III. The resident will demonstrate ability to perform lumbar puncture including appropriate pre-and post-procedure counseling and care.

   IV. The resident will demonstrate satisfactory skills in verbal communication and clinical documentation of neurologic complaints and general evaluations in the medical record.
2. **Medical Knowledge**
   I. Residents should demonstrate understanding of neuroanatomy sufficient to localize neurologic lesions.
   II. By completion of the rotation, the resident must reflect an understanding of the differential diagnosis and natural history of common neurological issues (see above list).
   III. The residents will demonstrate understanding of the indications, basic techniques, and basic interpretation of the following tests
      a. lumbar puncture and CSF analysis
      b. Carotid Dopplers
      c. Neuro-imaging including CT scans MRI scans PET scans
      d. EMG and nerve conduction studies
      e. EEG and evoked potential studies
      f. Metabolic testing, testing for autoimmune neurological diseases
   IV. The residents will understand the pathophysiology, clinical presentations, and achieve competence in the diagnosis and treatment of the following diseases:
      a. Stroke
      b. TIA/ RIND
      c. Meningitis- both acute and chronic
      d. Alzheimer’s disease and other causes of dementia
      e. Alcohol and drug related neurological disorders
      f. Seizure disorder
      g. Parkinsonism and other movement disorders
      h. MS and other demyelinating diseases
      i. Carpal tunnel and other entrapment syndromes
      j. CNS tumors and malignancy
      k. Peripheral neuropathy and radiculopathies
      l. Migraines and other causes of headaches
      m. Guillain-Barre Syndrome
      n. ALS and other motor neuron diseases
      o. Peripheral neuropathy
      p. Myopathy
      q. Muscular dystrophy
      r. Myasthenia gravis and other dystonias
      s. Neuro AIDS
   V. Residents will reflect satisfactory knowledge of the use of specific neurological drugs.

VII. **Interpersonal and Communication Skills**
   I. Residents will appropriately work with other neurological residents and show respect and ability to work well in a team setting
   II. Residents will create and sustain a therapeutic and ethically sound relationship with patients and their families.
   III. Residents will demonstrate ability to communicate effectively and demonstrate caring, compassionate, and respectful behavior.
VIII. **Professionalism**
   I. Residents will demonstrate respect, compassion, and integrity. They will demonstrate commitment to excellence and continuous professional development.

IX. **Practice Based Learning and Improvement**
   I. Residents will be able to locate, critically appraise, and assimilate evidence from scientific studies and apply this knowledge to patients seen on the neurology consultation service.
   II. Residents will demonstrate ability to use information technology to manage information, access on-line medical resources, and support self-education, patient care decisions and patient education.

X. **Systems Based Practice**
   I. Residents will practice cost-effective health care and resource allocation while advocating for quality.
   II. Residents will productively and cooperatively participate in Multidisciplinary Treatment Planning.