

CLINICAL NEUROSCIENCE CLERKSHIP SYLLABUS 2017-2018

Rotation Contact Information:
Marcela Guerrero, Unit Coordinator
Darine Kassar, M.D., Clerkship Director

Office phone: 915-215-5900
marcela.guerrero@ttuhsc.edu
darine.kassar@ttuhsc.edu

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PROGRAM DESCRIPTION:

The primary purpose of the Clinical Neuroscience Clerkship offered in the MS IV year is to provide the medical student with the ability to perform a neurological interview and examination, interpret signs, consolidate symptoms and signs into syndromes, accurately diagnose neurological diseases, and identify appropriate evidence-based management strategies. The goals and objectives outlined below have been developed internally and are consistent with the neurology core curriculum developed by the Consortium of Neurology Clerkship Directors and the Undergraduate Education Subcommittee of the American Academy of Neurology.

PROGRAM OBJECTIVES:

1. Student must master the basic techniques of a neurologic interview and neurological examination.
2. Student must be able to obtain practical information from the interview and neurological examination, and interpret the meaning of every bit of information obtained during the interview and neurological examination.

3. At the end of the rotation, the student must be able to integrate data and formulate appropriate statements regarding topographic localization of lesions within the central and peripheral nervous system.
4. Student will be able to formulate plans for investigation and management.
5. Student must master the knowledge of cardinal manifestation of primary neurologic diseases.
6. Student must know the basic neurologic complications of systemic diseases.
7. Student will be exposed to principles of geriatric neurology.
8. Student will learn utilization of laboratory data to complete a topographic and etiologic diagnosis.
9. Student should be able to define pathophysiologic mechanism of disease processes.
10. Student should be able to assess prognosis of neurological illnesses.
11. Student will identify neurologic emergencies and the need for expert assistance.

During the four-week Neuroscience Clerkship, students are assigned Monday through Friday to 2 weeks of outpatient clinics and 2 weeks inpatient consultative services.

These services will take place in 3 different locations:

- 1- University Medical Center (for the inpatient rotation).
- 2- Texas Tech Physicians of El Paso Neurology clinic (4801 Alberta Ave, El Paso TX 79905) (for the outpatient period).
- 3- William Beaumont Hospital with Dr. Scully (for the students assigned to WBH for the whole rotation period, including both inpatient and outpatient experiences).
WBH address: 5005 N Piedras St, El Paso TX 79920.

LEARNING OBJECTIVES: (All learning objectives are linked to the Education Program Goals and Objectives AY 2017-2018).

PATIENT CARE

GOAL: The student will develop recognition and effective integration of factors that contribute to optimal and compassionate care of patients presenting with neurological concerns.

OBJECTIVES: By the end of the clerkship students should be able to:

- Obtain a complete and reliable history (PGO 1.1).
- Conduct a focused and reliable neurological examination.(1.1)
- Formulate a differential diagnosis based on lesion localization, time course, signs, symptoms, and relevant demographic features (PGO1.3).
- Interpret electro diagnostic studies (EEGs, EMGs, nerve conduction studies), neuroimaging studies (CT, MRI), and common laboratory test used in the diagnosis of neurological disease (PGO 1.3).
- Formulate a plan for investigation and management of common neurological problems (PGO 1.2, 1.6).
- Discuss neurological manifestations of systemic diseases. (1.5, 1.3)

MEDICAL KNOWLEDGE

GOAL: The student will gain and develop an effective understanding of the assessment and management of common clinical conditions in neurology as they are encountered in the inpatient and outpatient settings. The student will master the expertise necessary to perform a complete neurologic examination. The learner will demonstrate the ability to acquire, critically interpret, and apply this knowledge.

OBJECTIVES: The student will recognize the signs, symptoms, and physical findings of neurological problems at the level of an MS IV, including the following:

- Stroke – by the conclusion of this clerkship, the student will be able to:
 - Describe the different subtypes of strokes and their etiologies. (2.2, 2.3)
 - Match the specific stroke syndromes with the occluded artery. (2.2, 2.3)
 - List the major risk factors for stroke. (2.4)
 - Describe treatment of acute stroke and prevention of recurrent stroke. (2.3, 1.6, 1.9)

- Epilepsy and Seizures – by the conclusion of this clerkship, the student will be able to:
 - Differentiate between seizures, epilepsy, and syncope. (2.1, 2.2, 2.3)
 - Classify seizure sub-types and describe the clinical features associated with these sub-types. (2.2, 2.3, 1.3)
 - Identify appropriate treatment options for patients with epilepsy including conventional and new antiepileptic agents. (2.3, 1.2, 1.6)
 - Recognize common adverse events associated with medications for the management of epileptic disorders. (2.3, 1.6, 6.3)

- Dementia - by the conclusion of this clerkship, the student will be able to:
 - Define and differentiate between dementia and delirium. (2.1, 2.2, 2.3, 1.3)
 - Recognize clinical features and laboratory findings associated with different types of dementia. (2.3, 1.3)
 - Generate appropriate differential diagnoses for patients presenting with cognitive problems. (2.3, 1.3, 1.2)

- Neuromuscular diseases – by the conclusion of this clerkship, the student will be able to:
 - Differentiate between upper motor neuron (UMN) and lower motor neuron (LMN) dysfunction. (2.2, 2.3)
 - Describe usual clinical features and differential diagnosis of motor neuron disease. (2.3, 1.3, 1.2)
 - Discuss localization for peripheral sensorimotor disorders (e.g. radicular pain, mononeuropathy, paresthesia, etc.). (2.2, 2.3)
 - Describe the pathogenesis, usual clinical presentation, workup, and treatment of myasthenia gravis. (2.2, 2.3, 2.4, 1.3, 1.2, 1.6)

- Headaches - by the conclusion of this clerkship, the student will be able to:

- Differentiate primary and secondary headaches. (2.2, 2.3)
- Discuss the distinctive clinical characteristics and epidemiology of migraine and its variations. (2.3, 2.4, 1.3)
- Outline a systematic approach to the management of patients with headache. (2.3, 1.2, 1.6)

- Infectious Diseases – by the conclusion of this clerkship, the student will be able to:
 - Integrate the information received in previous training about concepts on infectious diseases of the nervous system and their treatment, including viral encephalitis, bacterial meningitis, and fungal meningitis. (2.2, 2.3, 2.4, 1.2, 1.6, 1.3)
 - Students will review different cerebral spinal fluid changes on different types of infections. (2.2, 2.3, 1.3)

- Trauma – by the conclusion of this clerkship, the student will be able to:
 - Focus on diagnosis, aggressive screening measures and evidence-based clinical practice guidelines for the care of closed and penetrating Traumatic Brain Injury. (2.3, 2.4, 1.3, 1.6)
 - Receive information about diagnosis and management of cerebral edema, increased intracranial pressure, and different types of cerebral herniation, brain contusion and traumatic intracranial bleeding (hematomas, subarachnoid hemorrhage). (2.2, 2.3, 2.4, 1.3, 1.6, 6.3)

- Movement disorders - by the conclusion of this clerkship, the student will be able to:
 - Differentiate between hyperkinetic and hypokinetic movement disorders. (2.2, 2.3)
 - Describe pathological and neurochemical features of idiopathic Parkinson 's disease. (2.3, 1.3)
 - Describe clinical, pathological, and genetic features of Huntington 's disease. (2.2, 2.3, 2.4, 1.3)
 - Discuss pharmacological options available for treatment of essential tremor and Parkinson's disease. (1.6)
 - Discuss pathophysiology of Wilson's disease. (2.2, 2.3)

PROFESSIONALISM

GOAL: Students who demonstrate a commitment to carrying out professional responsibilities, adhering to ethical principles, displaying sensitivity to a diverse patient population.

OBJECTIVES: Throughout the clerkship students will demonstrate:

- Respect towards patient, families and co-workers whose lifestyles and values may be different from their own (PGO 5.1).
- Ethical behavior, including patient confidentiality (PGO 5.2, 5.5).
- Cultural sensitivity. (5.1, 5.4)
- Reliability. Arrive on time and be prepared for all required activities. (5.3, 5.7)
- Honesty and integrity in patient care (PGO 5.1, 5.6).

- Professional appearance. This means the student wears their white jackets with their name tags clearly visible and in business casual attire. Scrubs are only acceptable when observing procedures. (5.7)
- Be actively involved. (no Facebook, texting, talking socially with colleagues or cell phone use, during educational activities). (5.1, 5.3, 5.7)

INTERPERSONAL AND COMMUNICATION SKILLS

GOAL: The student will develop knowledge of specific techniques and methods that facilitate effective and empathic communication between the learner, faculty, colleagues, staff, and systems.

OBJECTIVES: Throughout the clerkship students will demonstrate the ability to:

- Communicate effectively with families and patients (PGO 4.1).
- Appropriately utilize interpreters if necessary to communicate with patients. (4.1, 4.3)
- Communicate effectively and respectfully with physicians and other health professionals in order to share knowledge and discuss management of patients (PGO 4.2, 4.3).
- Present clear, concise, and thorough oral and written presentations of patient history and physical examination results. (4.2, 4.4)
- Maintain professional and appropriate personal interaction with patients. (4.1, 5.2)

PRACTICE-BASED LEARNING AND IMPROVEMENT

GOAL: Understand the application of scientific evidence and accept feedback for continuous self-assessment in the improvement of patient care.

OBJECTIVES: Throughout the clerkship students will demonstrate the ability to:

- Apply technology (e.g. PDA, PC, Internet) in the acquisition and evaluation of Evidence-Based Medical information (e-medicine, journals, AAFP, NEJM, etc.). (3.1, 3.4, 3.5)
- Accept feedback from the faculty and incorporate this into improvement of clinical practice (PGO 3.3).
- Critically assess the quality and utility of medical information based on sources and methodologies (PGO 3.2).

SYSTEMS-BASED PRACTICE

GOAL: Develop an appreciation of supportive health care resources, and understand their utilization as part of patient advocacy.

OBJECTIVES: Throughout the clerkship students will demonstrate the ability to:

- Wisely utilize resources in patient care (e.g. efficiently use diagnostic and laboratory tests) (PGO 6.3).
- Understand and utilize ancillary health services and specialty consultants properly (PGO 6.2, 6.4).

INTERPROFESSIONAL COLLABORATION

GOAL: Demonstrate the ability to engage in an interprofessional team in a manner that optimizes safe, effective patient and population-centered care.

OBJECTIVES: Throughout the clerkship, students will be able to:

- Use knowledge of one’s own role and the roles of other health care professionals to work together in providing safe and effective care (PGO 7.2).
- Function effectively as a team leader and team member (PGO 7.3).

PERSONAL AND PROFESSIONAL DEVELOPMENT:

GOAL: Demonstrate the qualities required to sustain lifelong personal and professional growth.

OBJECTIVES: Throughout the clerkship, students will demonstrate the ability to:

- Recognize when to take responsibility and when to seek assistance (PGO 8.1)
- Utilize appropriate resources and coping mechanisms when confronted with uncertainty and ambiguous situations (PGO 8.4).
- Demonstrate the ability to employ self-initiated learning strategies when approaching new challenges, problems, etc (PGO 8.5).

CLINICAL CONDITIONS

List of clinical conditions students will be expected to see:

The clinical conditions students will be expected to see and document in the OPLOG patient encounter system are listed above in the section labeled “Medical Knowledge.” Level of involvement for required conditions is **assist or manage**. See Common Clerkship Requirements. These conditions will be encountered in the following settings:

Outpatient (Clinical Sciences Building-Basement)

- General Neurology Clinic
- Parkinson Clinic (Different types of Parkinson’s Disease, and deep brain stimulation)

- Epilepsy Clinic (Different types of seizure disorders and their treatment including the use of vagus nerve stimulation)
- Electro diagnosis (EMG) (optional)
- Basis of Geriatric Medicine relevant to Neurology (i.e. Dementia, syncope, fall, etc...)
- Headache Clinic

Inpatient (Team meets at Neurology Offices-AEC 108)

- General Neurology
- Neurological complications of systemic diseases
- Stroke rounds
- Stroke rehabilitation
- Electro diagnosis (EMG, Evoked Potentials)

List of procedures students will be expected to observe or to assist in performing:

1. All students complete at least 20 new patient evaluations.
2. If there is the opportunity, students will be able to perform diagnostic lumbar puncture at the Neurology Clinic under supervision.
3. Students will observe and assist in the performance of nerve conduction studies and electromyography (**only if the student expresses interest in observing this procedure**).
4. Programming of implantable pulse generators for deep brain stimulation and vagus nerve stimulation if requested by the medical student at the beginning of the rotation. In this case, the student can spend a half afternoon observing a study.
5. Observe and assist in Botox injection for migraine/spasticity post-stroke.

CLINICAL PRESENTATIONS

The following clinical presentations (CPs) from year 1-2 will be revisited during this rotation:

- Movement Disorder (Parkinson's Disease, Huntington chorea, Wilson Disease)
- Dementia
- Gait Disorder
- Headaches
- Vertigo
- Epilepsy
- Stroke
- Muscular weakness and atrophy

SCHEDULE OF CLINICAL AND TEACHING/LEARNING SESSIONS

The lecture schedule will be given to the students on the orientation day and it will include all the activities for the whole month.

All lectures will be available on Canvas for students to review at any time.

All lectures (including the simulation lab. sessions) are mandatory.

Lecture/Activity Schedule: (Please refer to Appendix 1 for a typical week calendar, and Appendix 2 for the list of faculty contributing to the lecture series).

1)- The Neurological Physical Exam Lecture will be the first day of the rotation. All other lectures are held on Wednesday/Thursday afternoon.

2)- The following core lectures are scheduled during every rotation:

Dr. Brower

* Epilepsy

Objective: - To understand the different types of seizure disorders (2.2, 2.3, 2.4)
-To overview the pharmacology of different anti-epileptic drugs. (1.6, 6.3)

Dr. Cruz

* Neurological Examination

Objective: - To demonstrate the basic and techniques of the neurological examination (1.1)

* Movement Disorders

Objective: - To explore the different types of parkinsonism disorders, and the modalities of therapies. (2.2, 2.3, 2.4, 1.3, 1.2, 1.6)

Dr. Piriawat

* Neuro Imaging

Objective: - To understand the difference between CT scan and MRI (2.2, 2.3)
- To explore the application of each in different clinical scenarios. (1.2, 1.3)

* Neurologic Emergencies

Objective: - To overview different neurological emergencies encountered in practice through case-based approach. (1.5, 1.3)

Dr. Rodriguez

* Spinal cord syndromes

Objective: - To overview the different clinical presentations of different spinal cord syndromes through case-based approach. (2.3, 1.3, 1.2)

* Coma

Objective: - To understand the pathophysiology of coma (2.2, 2.3)
- To overview the neurological examination in a comatose patient. (1.1, 1.3)

- To overview different causes and appropriate management in coma. (2.2, 2.3, 2.4, 1.2, 1.6)

* Headaches

Objective: - To be able to differentiate between a benign headache and a headache that requires immediate urgent care. (1.5, 1.3)

* Angiogram

Objective: - To overview the indication of cerebral angiogram, and overview of presentation of commonly encountered diseases. (2.3, 1.2, 1.6, 6.3)

Dr. Kassir

* Anatomy – An Overview

Objective: - To overview neuroanatomy through clinical cases. (2.1, 2.2, 2.3)

* Neuromuscular lecture

Objective: - To understand the concept of localization in the peripheral nervous system (2.2, 2.3)

* Demyelinating Diseases

Objective: - To overview multiple sclerosis and other similar diseases (diagnosis, management, etc). (2.3, 1.3, 1.2, 1.6)

* Simulation Center Activity on Wednesdays from 1:00-3:00 pm.

Objective: - To practice lumbar puncture and fundoscopic examination (1.10)

Dr.Maud

* Stroke

Objective: - To overview different types of stroke, and acute/chronic management. (1.3, 1.2, 1.5, 6.3)

* Angiogram

Objective: - To overview the indication of cerebral angiogram, and overview of presentation of commonly encountered diseases. (2.3, 1.2, 1.6, 6.3)

3)- Radiology Case Conferences are held every Monday morning from 7:45AM – 8:45AM held in the AEC building room 211.

4)- NBME study session (usually the 3rd Wednesday of the month, but always the review the calendar provided at the orientation).

5) - On occasion Grand Rounds will be held at 12:00PM with visiting professors who present updates on current neurological issues, faculty members from other specialties, community service representatives, and private specialists. Students are expected to attend Grand Rounds when scheduled during their rotation.

DESCRIPTION OF CLERKSHIP-SPECIFIC ASSIGNMENTS

Weekly didactic lectures/demonstrations will review cardinal manifestations of neurologic diseases and specific neurologic disorders. Special emphasis will be placed on the evaluation of

neurologic symptoms, and signs and on neurologic emergencies. Neurodiagnostic examinations such as EEG, evoked potentials, EMG, computerized tomography of head and spine, magnetic resonance imaging of the head and spine will be covered. Students will be assigned topics to cover, (depending on the faculty working with them), given handouts, reprints of articles, etc. Emphasis will be placed on the use of live demonstrations in patients and audiovisual aids such as videos of patients to illustrate neurologic signs (in particular movement disorders, gait disturbances, Horner's syndrome, hemiplegia, asymmetry of reflexes, and abnormal postures).

Every day the students either attend Neurology Clinic or inpatient consultation service, wherever they are assigned (*As mentioned earlier, the student will be given a calendar of the rotation during the orientation. For any questions or concerns about the calendar, the student has to contact the program coordinator*).

1. Student will examine at least 3 patients daily at the clinic under supervision, and student will be able to integrate the clinical information and the physical findings into syndromes and diseases. These clinics include General Neurology and Geriatrics, Parkinson's disease and Geriatrics, Multiple Sclerosis Clinic, Headache Clinic, and Epilepsy Clinic. Every student will be assigned to at least one inpatient consult every day they are assigned to inpatient consults. They will round with the attending daily on their patients and on other students' and residents' patients. They will be required to submit complete workups to the attending. These workups, which will be individually reviewed with the students, will include a detailed history and neurologic examination, topographic and differential diagnosis, and plan for investigation and management.
2. Each student will be tested on the neurologic examination. Students will be members of the consultation team, will follow patients, and will be expected to write progress notes. Students will be graded on clinical performance by the attending.
3. Students assigned to the inpatient team will be asked to participate in rounds **1 day of the weekend.**

METHODS FOR EVALUATING CLERK PERFORMANCE

See Common Clerkship Policies located on Canvas.

The clerkship director has ultimate responsibility for ensuring that student knowledge and core clinical skills are assessed in appropriate ways. In this clerkship the following methods are employed:

- * Direct observation of comprehensive neurological examination.
- * Review of 2 H&P write-ups. These H&P's may reflect the student's ability to conduct a sequenced history and physical examination, and the management plan (The first H and P should be received by the end of the second week, and the second H and P should be received at the end of the rotation).
- * **Each H&P should be attached to a list of orders that a student would like to order for evaluation of the case. (This is an exercise to help the student get used to write orders in the future during residency).**

- * Students will record their encounters on the on-line patient encounter system. At the mid-point of the rotation the clerkship director will review each student's entries to assess whether the educational goals and objectives are being achieved and to assist the student who may not be meeting objectives through schedule adjustments or through alternative methods (e.g. online cases, special readings, simulations, case conferences, etc.)
- * Performance on end of clerkship written examination (NBME neuroscience exam)
- * Complete all required Op Log entries. See Common Clerkship Policies. In addition to the Common Clerkship Requirements, 30 entries are required for Honors and 20 entries are required for a Passing grade.
- * Source of evaluation (for mid and final evaluation) is from: Cumulative faculty inputs and evaluations (2 evaluators/ 2 weeks period). Each week , 1 faculty (resident or nurse practitioner) will be asked to fill out 1 evaluation. At the mid-evaluation (or final evaluation) time, at least 2 evaluations will be available to be reviewed by the clerkship director. The clerkship director will be responsible in providing the final mid-evaluation and the final evaluation and also will be responsible in providing the feedback to the student. (The templates of the mid and final evaluation forms are attached at the end of the syllabus).
- * A Pre-test and post-test will be administered to students to evaluate their knowledge (This test is formative).

ABSENCES

See Common Clerkship Policies located on Canvas.

Scheduled absences must have advance personal notification to the Clerkship Coordinator and approval from the Clerkship Director. Realize that a scheduled absence may be an unexcused absence and may count as part of your allowable 3 days from your MS IV year.

Absences after 2 days, due to illness require documentation by a physician. Absence due to death of a relative requires documentation of an obituary. Unavoidable absences due to other reasons will be individually considered.

The first absence due to an illness is excused. Absences after the first day due to illness may be required to be made up; it is up to the discretion of the Clerkship Director.

In case of absence and if the student is asked to make up days, He or She will be assigned to the inpatient or outpatient services depending on the part missed the most.

LIST OF READING ASSIGNMENTS

Students are encouraged to consult the following material which is provided:

- 1) - Textbook: Aminof MJ, Greenberg DA, Simon RP: Clinical Neurology 9th Ed McGraw Hill

2) - Pre-Test Neurology, 8th edition; Principles of Neurology. McGraw Hill; Neurology (Weekly Journal of the American Academy of Neurology)

3) - NBME trial test online (It requires to be purchased by the student).

4) - BoardVitals.com.

LOGISTICAL INFORMATION

Contact Information: Marcela Guerrero

TEL 915-215-5915

marcela.guerrero@ttuhsc.edu