

## GOALS & OBJECTIVES

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### Neurology Clerkship Goals

Welcome to the Phase 2 Neurology Clerkship! These four weeks of your medical school career will be both challenging and immensely rewarding. By immersing yourself in the care of neurologically ill patients, with the guidance of expert faculty and resident educators, you will emerge after these short weeks with the core skills that will make you a successful resident and future physician. In addition, we hope that we can show you the excitement of the life as a neurologist. The goal of the Third Year Neurology clerkship is to prepare the student to identify diseases and situations in which neurological evaluation is appropriate so that the student understands as a practitioner when neurological consultation is appropriate and when emergent neurological intervention is needed.

Each student will have 2 week inpatient and 2 week outpatient rotations. Outpatient - You will either be placed in Galter, Arkes, or Lavin neurology subspecialty clinics, pediatric neurology clinics, or with selected private adjunctive faculty. In some clinics it will be an observership. Take that opportunity to watch how an experienced physician examines, interviews, and interacts with patients. We try to give you some continuity with a few doctors while still giving you a variety of sub-specialities. In the private clinics you will be working with 1-2 physicians and will see a variety of diagnoses. Read up on patients ahead of time when possible. You can do this by logging into the EPIC system to see your faculty's schedule. On inpatient, you will spend one week on two different services: ER Neurology Consults, general neurology inpatient service, stroke service, consult service, neurology intensive care unit, or pediatric neurology.

We consider our students to be integral parts of caring for neurologically ill patients. Year in and year out, students say (and we agree) that the best learning experience is to take an H&P 1-on-1 with a patient, develop an independent assessment and plan, and get feedback from your teachers. Thus, the majority of your time will be spent caring for patients. To supplement this core aspect of your teaching, we have a number of additional requirements, including weekly conferences, physical examination rounds, and specific assignments.

In addition to the above activities, students will be responsible for completing and actively maintain their online clerkship log to ensure they are completing the clinical requirements of the clerkship; they will also take the end of rotation Objective Structured Clinical Examination (OSCE) and the NBME Subject Examination at the end of the clerkship.

The Phase 2 Neurology Clerkship will provide the foundation of knowledge and skills which you will need in neurology, regardless of the specialty you decide to enter.

During this four-week clerkship, we will assist you in achieving the following important goals. We do not expect mastery of all goals listed but through efficient use of your time, we anticipate good progress will be made in attaining these goals.

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## Phase 2 (All Clerkships) Common Objectives

**Objective 1: Perform complete or directed neurologic-focused histories and physicals when appropriate, and document efficiently in the medical record (EPA 1, EPA 2, EPA 5) (PCMC-1; PCMC-2; PCMC-3; PCMC-5;**

ECIS-1; ECIS-2)

### *Expectations*

Faculty and residents will teach students the important and unique components of the diagnostic and therapeutic process in neurology and how to document these findings. Sample neurology H&Ps are included in the Introduction to Phase 2 Purple Book. Components of the neurology H&P are reviewed during orientation and students will utilize both templated and free form H&Ps for documentation in a variety of clinical settings. Ongoing feedback on written H&Ps will be provided throughout the clerkship. Additional H&P information is provided in specific knowledge objectives.

It is expected that all students should demonstrate proficiency with the core neurology physical examination techniques during the clerkship. These skills have been previously introduced and practiced during Phase 1. Students will be supervised when necessary and during orientation with a standardized patient. A video demonstration and written description of the exam are also available on Emerge. Students will complete multitude of exams and document throughout the rotation. Students will also participate in physical examination of a patient with altered level of consciousness/ Coma with a faculty preceptor. Students are also expected to know how to adapt the neurologic examination in young children, which is provided in the Phase 2 Purple book and will be reviewed in exam demonstration on orientation and during a Friday Case Based Didactic (CBD). It is also expected that students demonstrate the use of techniques that ensure patient safety during the examination: some strategies include appropriate hand and instrument cleaning, single use of pins to test sensation, stabilizing position of the patient during muscle strength testing, and standing near the patient during the Romberg and gait examination

### *Assessment*

As one of these H&Ps will be reviewed and critiqued by neurology faculty, this component will be incorporated into the final grade narrative. Though faculty and residents will read and review student notes on an ongoing basis during the clerkship. At least three physical exams will be observed, the first with a standardized patient on orientation, then with an actual patient with the direct observation form, and finally with a standardized patient during their OSCE evaluation.

**Objective 2: Acquire and apply evidence-based knowledge about neurology conditions and diseases. (EPA 2, EPA 3, EPA 7) (MKS-1b,1c,1d,1e,1f; MKS-3a,3b; CLQI-3; PBMR-1; PBMR-2, PCMC-3)**

### *Expectations*

Students will learn about each of the knowledge objectives. The list of the specific neurology knowledge objectives (by topic) that we expect you to know by the end of the neurology rotation is provided below. Additional information is provided in Emerge and orientation handout. The reading list is from Gelb Introduction to Clinical Neurology fourth edition, High Yield Neuroanatomy third or fourth edition by James D Fix, Harrison's Principles of Internal Medicine or from resources posted on Emerge. In addition, students will practice constructing clinical questions and answering them by retrieving and analyzing the pertinent medical literature.

### *Opportunities to achieve the objective*

1. Students will actively participate in the evaluation and care of patients presenting with a variety of medical concerns or needs.
2. Students will participate in scheduled conferences, including case-based workshops, didactic sessions, read required materials, and participate in other interactive formats.
3. Students will participate in a conference focused on identifying, discussing, and analyzing ethical issues specific to neurology

### *Assessment*

1. Students will document all relevant patient encounters in the online clerkship log.

2. If the student has not been actively involved with an actual patient in each of the assigned clerk log categories by the end of the last week of the clerkship, the student will fulfill the requirement by using simulated sessions.
3. Students will demonstrate their acquisition of knowledge by successful completion and passage of the NBME Subject Examination in Neurology (minimum score in the 10<sup>th</sup> percentile nationally).
4. Students will identify and submit a brief description of an ethical dilemma they encountered during their clerkship. They will then participate in one ethics conference and be able to participate in a discussion of ethical principles as they apply to neurology: (attend one conference, complete one write-up) PBMR-1
5. Students will be evaluated specifically on their ability to acquire from the literature and apply scientific knowledge to clinical problem solving with an MDM assignment (EPA 7).

**Objective 3: Demonstrate effective interpersonal communications skills as a member of the healthcare team (EPA 6, EPA 9) (ECIS-1; ECIS-3; ECIS-4; PCMC-6; CES-2)**

#### *Expectations*

Students will:

- Establish rapport with patients.
- Work cooperatively with others.
- Establish sufficient visibility and rapport with residents, fellows and attendings to be fairly evaluated.
- Communicate in a way patients understand by avoiding medical jargon and checking back for understanding.
- Contribute information effectively to the team in a clear and timely manner.
- Identify social barriers to care and link patients to resources to address them.

#### *Assessment*

Students will be evaluated specifically on these interpersonal skills (Professionalism domains and EPA 9). Students will request 360-degree evaluations from peers, nurses, and other health care professionals. Feedback will be incorporated into the Final Grade narrative where appropriate.

**Objective 4: Demonstrate professional characteristics as a student doctor and a member of the healthcare team**

(EPA 9) (PBMR-3; PBMR-5; PBMR-6; PBMR-7; SATBC-2a-b; CLQI-1a-b; CLQI-2)

#### *Expectations*

Students will:

- Demonstrate dependability, truthfulness and integrity.
- Participate actively in learning opportunities and work assignments.
- Acknowledge and demonstrate awareness of own limitations.
- Take initiative for their own learning and patient care.
- Remain open to feedback and implement it.
- Treat all patients with respect and compassion
- Protect patient confidentiality.
- Students participating in patient care activities are expected to present a professional image in both conduct and attire, including the following:
  - Personal cleanliness
  - Attire appropriate to professional environment
  - Clean white coat
  - Jade green scrubs only in the proper locations, covered when appropriate and never worn outside the hospital
- Professional conduct also includes the following:

- Charting is to be completed in a timely manner
- Do not remove hard copies of medical records from the hospital
- Do not discuss patients in public places
- Do not argue diagnoses or management plans in front of patients or in the medical record
- Arrive on time and well-prepared

#### *Assessment*

Students will be evaluated specifically on professionalism and this evaluation will be reflected in the Clinical Performance Assessment (EPA 9 and Professionalism Domains). Feedback will be incorporated into the Final Grade Narrative where appropriate.

### **Objective 5: Advocate on behalf of patients. (CES-1, CES-2, SATBC-1)**

#### *Expectations*

Students will:

- Identify social barriers to care and link patients to resources to address them.
- Effectively call on system resources to provide care that is of optimal value.

#### *Assessment*

Students will be evaluated specifically on these skills through the use of the CPA forms and Professionalism Assessment Tool (PAT form) requested from nurses. This evaluation will be reflected in the Final Grade Narrative.

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# Neurology Clerkship Objectives

## **MEDICAL KNOWLEDGE AND SCHOLARSHIP**

1. Identify neuroanatomic structures in cross sections of the brain and spinal cord in radiographic (MRI and CT) images. MKS-1a (RL, CPA, NBME, OSCE, CBD)
2. All students will be given opportunity to participate in a lumbar puncture simulation with direct observation. (PCMC-4) (SIM)
3. Recognize symptoms that may signify neurologic disease (including disturbances of consciousness, cognition, language, vision, hearing, equilibrium, motor function, somatic sensation, and autonomic function) MKS-1d (CPA, NBME, OSCE, CBD)
4. Identify symptoms that may represent neurologic emergencies MKS-1d, PCMC-2, 3 (CPA, NBME, OSCE, CBD)
5. Distinguish normal from abnormal findings on a neurologic examination MKS-1d, PCMC-2 (DO, CPA)
6. Localize the likely sites in the nervous system where a lesion may produce a patient's symptoms and signs MKS-1d, PCMC-3 (DO, CPA, NBME, OSCE, CBD)
7. Formulate a differential diagnosis based on lesion localization, time course, and relevant historical and epidemiologic features MKS-1d,3a, PCMC-3 (HPMDM, DO, CPA, OSCE, CBD)
8. Explain the indication, potential complications, and interpretation of common tests used in diagnosing neurologic disease MKS-1d,3a, PCMC-3 (HPMDM, DO, CPA, NBME, OSCE, CBD)

9. Apply the principles underlying a systematic approach to the management of common neurologic diseases  
MKS-1e,3b, PCMC-3 (HPMDM, DO, CPA, NBME, OSCE, CBD)
10. Describe the timely management of neurologic emergencies MKS-1d,1e, 3b, PCMC-3 (DO, CPA, CBD)
11. Describe situations in which it is appropriate to request neurologic consultation MKS-1d,3a, PCMC-3 (DO, CPA, CBD)
12. Describe cognitive biases and the implications for diagnostic errors MKS-3a, PCMC-3 (CPA, DO)
13. Differentiate and compare/contrast signs/symptoms of lesions which occur at the following neurologic level:  
MKS-1d, PCMC-2 (CBD, CPA, OSCE, NBME)
  - a. Cerebral cortical and subcortical structures
  - b. Posterior fossa (brain stem and cerebellum)
  - c. Spinal cord
  - d. Anterior horn cell
  - e. Nerve root/plexus
  - f. Peripheral nerve (mononeuropathy, polyneuropathy, and mononeuropathy multiplex)
  - g. Neuromuscular junction
  - h. Muscle
14. List the differential diagnosis for and evaluation of patients who present with the following findings: MKS-1d,3a, PCMC-1,2,3 (CL, CoL, CBD, CPA, OSCE, NBME)
  - a. Acute, subacute, or episodic changes in mental status or level of consciousness
  - b. Gradual cognitive decline
  - c. Aphasia
  - d. Headache or facial pain
  - e. Neck or back pain
  - f. Blurry vision or diplopia
  - g. Dizziness
  - h. Dysarthria or dysphagia
  - i. Weakness (focal or generalized)
  - j. Involuntary movements
  - k. Numbness, paresthesia, or neuropathic pain
  - l. Urinary or fecal incontinence/retention
  - m. Unsteadiness, gait disturbance, or falls
  - n. Sleep disorders
  - o. Delay or regression in developmental milestones
15. Describe the presentation, evaluation and management of the following neurologic conditions and identify which ones are potentially disabling/life-threatening and require a prompt response: MKS-1d, 1e, 3a, 3b ; PCMC-1,2,3 (CL, CoL, CBD, CPA, OSCE, NBME)
  - a. Acute stroke (ischemic or hemorrhagic) or TIA
  - b. Acute vision loss
  - c. Brain death
  - d. CNS infection
  - e. Encephalopathy (acute or subacute)
  - f. Guillain-Barre syndrome
  - g. Head trauma
  - h. Increased intracranial pressure
  - i. Neuromuscular respiratory failure
  - j. Spinal cord dysfunction
  - k. Status epilepticus
  - l. Neuropathy (polyneuropathy, Bell's palsy, and/or Carpal tunnel, etc)
  - m. Subarachnoid hemorrhage
  - n. Alzheimer disease

- n. Epilepsy (including hormonal treatment interactions, contraception and LGBTQ gender affirming care, etc)
- o. Essential tremor
- p. Headache (tension, migraine, cluster)
- q. Multiple sclerosis
- r. Myasthenia gravis
- s. Myopathy
- t. Parkinson disease

#### **PATIENT-CENTERED MEDICAL CARE**

1. Perform all aspects of the neurological exam with good technique **PCMC-2 (DO, CPA, OSCE)**
2. Develop, present, and document a succinct, appropriate assessment and plan for the neurologic problem list **MKS-3a, PCMC-3 (DO, CPA, OSCE)**
3. Describe when to perform a screening neurological examination versus a focused neurological examination **PCMC-3 (DO, CPA)**
4. Recognize key abnormal neurological findings and interpret them; develop a differential diagnosis **PCMC-2,3; MKS-3a (DO, CPA)**
5. Optional, list the steps of and perform a lumbar puncture in a simulated environment **PCMC-4 (SIM)**
6. Students will be evaluated specifically on their ability to search and analyze the literature using the MDM rubric **CLQI-3 (HPMDM)**.

#### **COMMUNICATION AND INTERPERSONAL SKILLS**

1. Communicate effectively with patients and families using non-medical jargon and checking for understanding. **ECIS-1, ECIS-3 (CPA, RN)**
2. Provide culturally-sensitive patient education at an appropriate literacy level. **ECIS-3, CES-1 (CPA, RN)**
3. Communicate patient information accurately and efficiently to all health care team members in a timely manner. **ECIS-3 (CPA, RN)**
4. Deliver clear, properly-timed, and well-formatted oral presentations. **ECIS-3, PCMC-3 (CPA, RN, MC)**
5. Write concise, accurate admission and progress notes in the EHR with up-to-date information including current patient assessments, appropriate physical exams, and problem-based plans. **ECIS-2, PCMC-3, PCMC-5 (CPA)**

#### **PROFESSIONAL BEHAVIOR AND MORAL REASONING, PERSONAL AWARENESS & SELF-CARE**

1. Consistently take initiative for own learning and patient care. **PBMR-7, PASC-3 (CPA, CL)**
2. Demonstrate accountability, dependability, and integrity when interacting with patients, families, and members of the health care team. **PBMR-3, PBMR-5, SATBC-2a (CPA, RN)**
3. Demonstrate respect, compassion, accountability, dependability, and integrity. **PBMR-5 (CPA)**
4. Observe all patient privacy guidelines. **PBMR-6 (CPA)**
5. Adhere to standards regarding punctuality, dress, and professional boundaries. **PBMR-7 (CPA)**

#### **SYSTEM AWARENESS AND TEAM-BASED CARE**

1. Work as an effective member of the healthcare team in an outpatient clinic, inpatient teaching team, or urgent care setting. **SATBC-2a, 2b (CPA)**
2. Interact effectively with clerical staff, nurses, physician assistants, nurse practitioners, and physicians in a

cooperative manner to effectively and efficiently provide patient care. SATBC-2a, 2b (CPA, RN)

3. Collaborate effectively to help the healthcare team achieve its goals. SATBC-2a, 2b (CPA, RN)

### COMMUNITY ENGAGEMENT AND SERVICE

1. Identify a patient's medical and social needs and assess barriers in accessing care. CES-1, SATBC-1 (CPA)
2. Appropriately utilize community resources and multidisciplinary consultants including social work, nutrition, and physical therapy, for patients in both inpatient and outpatient settings. CES-2, SATBC-1 (CPA, RN)
3. Assess and reflect on ethical challenges when caring for patients. PBMR-1, PBMR-2 (ES)
4. Demonstrate awareness of community/social factors that influence medical decision-making. CES-1, PBMR-2 (CPA)

### Assessment Type:

CPA	Clinical Performance Assessment
RN	Nurse Professionalism Evaluation
NBME	Shelf Examination
OSCE	Observed Simulated Clinical Encounter
ES	Ethics Session
CL	Clerklog
SIM	Simulation
CBD	Case based learning
DO	Direct observation
HPMDM	History and physical with medical decision making assignment
RL	Radiology Review Interactive Lecture
CoL	Cognitive Lecture
MC	Mid-Clerkship Feedback Form