

**LOYOLA  
MEDICINE**



*Stritch School of Medicine*

# **Neurology Clerkship Orientation**

# Clerkship Contacts

## Clerkship Director:

Rick Gill, MD  
Department of Neurology, Room 2717  
McGuire Building

rick.gill@lumc.edu

## Assistant Clerkship Director:

Ravi Garg, MD  
Department of Neurology, Room 2718  
McGuire Building

ravigarg@lumc.edu

## Educational Coordinator:

Maureen Flaherty  
Room 300 SSOM

mflaherty@luc.edu  
65319

## Student Coordinator, Hines VA:

Jennifer Matza  
Jennifer.Matza@va.gov

## Student Coordinator, MacNeal:

Adriana Ortiz  
Adriana.Ortiz@luhs.org



# Orientation

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- All the information discussed here is available on the Neurology Clerkship Sakai, including some educational resources.
- See the Educational Coordinator after this orientation is over, to complete paperwork and obtain schedules and yellow patient log cards.
- Report to your first assignment, whether outpatient clinic or an inpatient service, according to your schedule. If you start with an inpatient service, page the assigned resident for a place to meet.



# Clerkship Objectives

All learning objectives are listed in the clerkship webpage, and all exam questions are directly linked to these objectives. Thus, the learning objectives are a framework or guide in studying for the clerkship exams.

It is expected that you will encounter at least one inpatient or outpatient with each of these clinical diagnoses or syndromes during this clerkship:

**Dizziness/Abnormal Gait or Balance**

**Focal Weakness or Numbness**

**Headache or Regional Pain**

**Impaired Consciousness or Sleep Disorder**

**Seizure or Abnormal Movements**

**Visual Changes**

**Dementia/Memory/Cognitive Loss**

**Delirium/Acute Mental Status Change**



# Clerkship Structure

## Loyola

One week on each of the following:

- Inpatient Vascular Neurology (admissions and consults)
- Inpatient General Neurology (admissions and consults on non-stroke patients)
- Outpatient Clinic or Pediatric Neurology (inpatient and clinic)
- Neurointensive Care Service or Night Call (4-10 PM, Mon through Fri)

## Hines VA

Two weeks on each of the following:

- Inpatient Ward/Consult Service
- Outpatient Clinic/Clinical Neurophysiology Lab

## Macneal Hospital

Two weeks on the following:

- Inpatient Ward/Consult Service (attending and NP service)
- Two additional weeks at LUMC



# Objectives & Clinical Patient Care Goals (AAN)

**Goal:** To teach the principles and skills underlying the recognition and management of the neurologic diseases a general medical practitioner is most likely to encounter in practice.

Medical knowledge

Patient care

Interpersonal and Communication Skills

Practice Based Learning and Improvement

Professionalism

Systems Based Practice

Inter-professional Collaboration

Personal and Professional Development



# Clinical Patient Care Objectives

## To teach or reinforce the following PROCEDURAL SKILLS:

- a. the ability to obtain a complete and reliable history
- b. the ability to perform a focused and reliable neurologic examination
- c. the ability to examine patients with altered level of consciousness or abnormal mental status
- d. the ability to deliver a clear, concise, and thorough oral presentation of a patient's history and examination
- e. the ability to prepare a clear, concise, and thorough written presentation of a patient's history and examination
- f. [Ideally] the ability to perform a lumbar puncture



# Clinical Patient Care Objectives

## To teach or reinforce the following ANALYTICAL SKILLS:

- a. the ability to recognize symptoms that may signify neurologic disease (including disturbances of consciousness, cognition, language, vision, hearing, equilibrium, motor function, somatic sensation, and autonomic function)
- b. the ability to distinguish normal from abnormal findings on a neurologic examination
- c. the ability to localize the likely site or sites in the nervous system where a lesion could produce a patient's symptoms and signs
- d. the ability to formulate a differential diagnosis based on lesion localization, time course, and relevant historical and demographic features
- e. an awareness of the use and interpretation of common tests used in diagnosing neurologic disease
- f. an awareness of the principles underlying a systematic approach to the management of common neurologic diseases (including the recognition and management of situations that are potential emergencies)
- g. an awareness of situations in which it is appropriate to request neurologic consultation
- h. the ability to review and interpret the medical literature (including electronic databases) pertinent to specific issues of patient care
- i. **YOU MUST BE PREPARED TO PRESENT A PATIENT ON THE FIRST DAY OF ANY NEW SERVICE LINE YOU JOIN AS PART OF THIS ROTATION (EXCEPT ROTATION DAY #1)**





# Subjects to be Taught

See AAN Core Curriculum Guidelines/Appendix for full content of subjects to be taught:

- a. **The Neurologic Examination** (as an integral component of the general medical examination)
  - a. Focused thorough examination
  - b. Screening examination
  - c. Examination of a patient with altered level of consciousness
  - d. Recognize and interpret abnormal findings on the neurologic examination
- b. **Localization**
- c. **Symptom Complexes** – a systematic approach to evaluation and differential diagnosis
- d. **Approach to Specific Diseases** – general principles for recognizing, evaluating and managing common neurologic conditions

<https://www.aan.com/siteassets/home-page/tools-and-resources/academic-neurologist--researchers/clerkship-and-course-director-resources/neurology-clerkship-core-curriculum-guidelines.new.pdf>



~ NEUROLOGY ~

NAME \_\_\_\_\_ PERIOD \_\_\_\_\_

SITE \_\_\_\_\_

NUMBER OF ASSIGNED PATIENTS

CONDITION	ASSIGNED	NOT ASSIGNED	SIMULATION
Delirium/Acute Mental Status Change			
Dementia/Memory/Cognitive Loss			
Dizziness/Abnormal Gait or Balance			
Focal Weakness or Numbness			
Headache or Regional Pain			
Impaired Consciousness or Sleep Disorder			
Seizure or Abnormal Movements			
Visual Changes			
PROCEDURES	PERFORMED	OBSERVED	SIMULATION
Venipuncture			
Insert IV Catheter			
Arterial Puncture			
Lumbar Puncture			
Insert NG Tube			
Insert Foley			

**Assigned:** your patients

**Not Assigned:** your colleague's patients; **examine** all patients (with permission from the patient) with unique findings on their neurologic examination

**Simulation:** Look up that syndrome in Study Guide 1 for the Practical Neurology DVD Review, under Educational Resources on the clerkship webpage, and choose a videotaped case to see. Mark that syndrome as a "Simulation" on the yellow card and on-line log. Practical Neurology DVD Review, a compilation by Dr. José Biller of over 100 videotaped patients, is accessible through the clerkship webpage. Study Guide 2 for the Practical Neurology DVD Review categorizes the videotaped patients according to final diagnosis (e.g., multiple sclerosis).



# Student Evaluations and Grading

## Expectations of Neurology Clerkship Students

1. Actively participate in patient care in the hospital and outpatient clinic, maintain a log of patients and procedures, and achieve relevant clinical competencies. Attend all case-based student sessions, including the Lumbar Puncture Workshop, where a simulated lumbar puncture is performed.

Exam Day is the last day of the clerkship. Your patient care and service duties end at noon of the day before Exam Day.

On Exam Day, students will take two on-line examinations: (1) a patient case vignette videotape examination, and (2) the NBME Shelf examination.

The **patient case vignette videotape exam** consists of 25 on-line, multiple choice questions pertaining to 12 videotaped patients from the Practical Neurology DVD Review. One hour is given for this test, which constitutes a standardized clinical skills exercise, testing analysis and interpretation of signs and symptoms. Please bring your earphones for this test.

The **NBME Shelf exam**

The **OSCE (mid clerkship)**

**Stroke Simulation (mid clerkship)**



# Student Evaluations and Grading

The attending neurologist working with each student will complete his/her on-line clinical competency evaluation form, when that rotation ends (weekly at Loyola and Macneal, every 2 weeks at Hines).

The clerkship directors will meet with each student to review the first TWO WEEKS of evaluations in a **mid-clerkship feedback session**.

**Complete the SMART Goals sheet to review with the clerkship directors**



## NEUROLOGY CLERKSHIP

PC2 - Gather essential and accurate information about patients and their condition through history, physical examination, and the use of laboratory data, imaging, and other tests (2.1)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
Information unreliable, omissions, disorganized approach	Limited prioritizing of findings, incorrectly performing physical exam maneuvers	Information with some omissions, connecting information to existing factual knowledge, demonstrates patient centered information gathering	Prioritizes information, with most pertinent positives and negatives, performs basic physical exam maneuvers correctly	Gathers focused information in urgent, emergent or consult setting, identifies alternative sources of information

PC4 - Interpret laboratory data, imaging studies, and other tests required for the area of practice (2.1)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
Unable to interpret data	Provides list of standard labs/imaging, unable to prioritize/provide rationale for ordering	Provides initial plan for lab/imaging, targeted to working diagnosis, occasionally misinterprets data, may fail to recognize urgency of abnormalities	Consistently interprets data accurately, provides rationale for each test	Identifies urgent values without assistance, provides clear rationale for recommendations

PBL11,5 - Identify strengths, deficiencies, and limits in one's knowledge and expertise, Incorporate feedback into daily practice (4.1, 4.3)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
No insight/reflection into limitations, does not recognize when help required	Defensiveness with feedback, limited incorporation into practice	Solicits feedback, can recognize self limitations, some incorporation of feedback into daily practice (transient change in behavior)	Routinely solicits feedback, actively reflects, recognizes limitations, appropriately requests help	Routinely reflects on suboptimal practices, makes positive behavior changes



ICS1 - Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds (3.2)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
Does not engage family or patient, inattentive to needs	Unidirectional communication, mostly template based, respects patient preferences when told, avoids difficult conversations	Actively engages patient and family in discussions, avoids medical jargon, will solicit and respect patient preferences	Adapts to patient's situational needs, uses different techniques (teach back) to ensure understanding	Actively engages family and patient in shared decision making, bidirectional communication

ICS2 - Communicate effectively with colleagues within one's profession or specialty, other health professionals, and health-related agencies (see also interprofessional collaboration competency (IPC) 7.3) (3.3/7.3)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
Fails to communicate with other team members (does not answer page, etc)	Communication rigid, little insight into situation, avoids difficult conversations	Active listener, engages team members (including supervisor), Discusses plans, keeps team up to date on activities	Can participate in unfamiliar situations, engages others, even with difficult conversations	Effective communicator with difficult/uncomfortable conversations

P1 - Demonstrate compassion, integrity, and respect for others (5.1)

No Capacity to Act	Safe with Direct Observation	Safe with Direct Observation	Safe with Indirect Observation	Safe in Teaching Capacity
Disrespectful interactions, does not tell truth, generates conflicts	Needs to be reminded of proper conduct, difficulty modifying behavior, especially with stress/fatigue	Demonstrates professional conduct, tells truth, respectful interactions	Remains professional with stress and fatigue, does not need reminders to modify behavior	Professional conduct in all circumstances, understands own triggers for lapses



# Grade Calculation

**The final Neurology Clerkship grade is calculated as follows:**

**40% of grade = NBME Shelf**

**20% of grade = patient case vignette video exam score**

**10% of grade = stroke simulation + case assignment + LP simulation**

**10% of grade = OSCE**

**20% of grade = 4 evaluations x 5% or 3 x 6.67% (if <3-4 evaluations received, we will average those received to account for a missing or unable to evaluate CPR)**

(An Incomplete grade is given for a score under 60% on the 100 multiple-choice question exam. Retaking this exam a month later and scoring 60% or better changes the final grade to Pass, while a repeat score under 60% creates a Failure grade, with remediation arranged by the Clerkship Director and Educational Deans.)

**Total final clerkship grades:**

**89.50-100 points are Honors (H)**

**84.50-89.49 points are High Pass (HP)**

**60.0-84.49 points are Pass (P)**

A final grade less than 60 points will be remediated at the discretion of the Clerkship Director and Educational Deans. All grades are final and every effort has been made to give the student the benefit of rounding with grade cutoffs of 84.5 and 89.5 (HP/H) and grades and evaluation scores will not be negotiable.

After completing the final examinations, you have two weeks to submit an on-line evaluation of the clerkship. A comment under "Concerns" for Professionalism in your profile will appear if you do not give this feedback.



# Educational Sessions & Resources

1. Neurology Grand Rounds (every Friday at noon, SSOM)
2. LP Workshop (orientation day, SSOM)
3. Epilepsy Conference (Mondays at noon, Rubino Library, McGuire Building – Department of Neurology)
4. Neuroradiology Conference (Tuesdays at noon, Rubino Library, McGuire Building – Department of Neurology)
5. Dr. Biller: Medical Student Sessions – recorded video's for week 1
6. Dr. Greuner: Case Conference
7. Dr. Gill: The Neurologic Exam and Case Conference

## RESOURCES:

1. Lumen educational resources (Case Files, **Pretest 9e self assessments**, less emphasis on Merchut notes etc)
2. **USMLE World Step 2 Qbank**
3. **First Aid for Step 2**
4. **Neurology DVD Review\***
5. **Online MedEd**
6. **SAS Study Guide**
7. Radiopedia & [www.headneckbrainspine.com](http://www.headneckbrainspine.com)





# Leave of Absence & Other Policies

1. Students who are absent due to illness or an emergency should email/call the Educational Coordinator and fill out an absence form later. A request for a planned leave of absence must be submitted one month prior to the start of the clerkship to the Clerkship Director, Educational Coordinator, and Office of Loyola-Stritch Student Affairs. Requests are evaluated on an individual basis and may not all be granted. Absent days will be made up or remediated at the discretion of the Clerkship Director.
2. The last day of the clerkship is the date of the final examinations, which cannot be changed since on-line exams are given in a secure room.
3. Student abuse, whether physical, psychological or sexual, is never to be accepted or tolerated. Students are asked to confidentially discuss any issues of abuse, as early as possible, with the clerkship director.
4. You are expected to be in the vicinity of the hospital until 5:00 PM each week day, and should not leave for the day if rounds are completed earlier. New patient admissions or consultations may occur later in the afternoon. Any “down time” should be spent on reading or using the on-line self-study resources mentioned.
5. On inpatient service weeks, students are expected to round with the team on either Saturday or Sunday, to be discussed in advance with the service residents



# Appendices



LOYOLA  
MEDICINE

# Appendix 1: AAN Guidelines for a Comprehensive Neurologic Examination

All medical students should be able to perform the following parts of the neurologic examination:

## A. Mental Status

1. Level of alertness
2. Language function (fluency, comprehension, repetition, and naming)
3. Memory (short-term and long-term)
4. Calculation
5. Visuospatial processing
6. Abstract reasoning

## B. Cranial Nerves

1. Vision (visual fields, visual acuity, and fundoscopic examination)
2. Pupillary light reflex
3. Eye movements
4. Facial sensation
5. Facial strength (muscles of facial expression and muscles of facial expression)
6. Hearing
7. Palatal movement
8. Speech
9. Neck movements (head rotation, shoulder elevation)
10. Tongue movement

## C. Motor Function

1. Gait (casual, on toes, on heels, and tandem gait)
2. Coordination (fine finger movements, rapid alternating movements, finger-to-nose, and heel-to-shin)
3. Involuntary movements
4. Pronator Drift
5. Tone (resistance to passive manipulation)
6. Bulk
7. Strength (shoulder abduction, elbow flexion/extension, wrist flexion/extension, finger flexion/extension/abduction, hip flexion/extension, knee flexion/extension, ankle dorsiflexion/plantar flexion)

## D. Reflexes

1. Deep tendon reflexes (biceps, triceps, brachioradialis, patellar, Achilles)
2. Plantar responses

## E. Sensation

1. Light touch
2. Pain or temperature
3. Proprioception
4. Vibration



# Appendix 2: AAN Guidelines for a Screening Neurologic Examination

All medical students should be able to perform a brief, screening neurologic examination that is sufficient to detect significant neurologic disease even in patients with no neurologic complaints. Although the exact format of such a screening examination may vary, it should contain at least some assessment of mental status, cranial nerves, gait, coordination, strength, reflexes, and sensation.

One example of a screening examination is given here.

**A. Mental Status** (level of alertness, appropriateness of responses, orientation to date and place)

## **B. Cranial Nerves**

1. Visual acuity
2. Pupillary light reflex
3. Eye movements
4. Hearing
5. Facial strength (smile, eye closure)

## **C. Motor Function**

1. Gait (casual, tandem)
2. Coordination (fine finger movements, finger-to-nose)
3. Strength (shoulder abduction, elbow extension, wrist extension, finger abduction, hip flexion, knee flexion, ankle dorsiflexion)

## **D. Reflexes**

1. Deep tendon reflexes (biceps, patellar, Achilles)
2. Plantar responses

**E. Sensation** (one modality at toes – can be light touch, pain/temperature, or proprioception)

Note: If there is reason to suspect neurologic disease based on the patient's history or the results of any components of the screening examination, a more complete neurologic examination may be necessary.



# Appendix 3: AAN Guidelines for the Neurologic Examination in Patients with Altered Level of Consciousness

## **A. Mental Status**

1. Level of arousal
2. Response to auditory stimuli (including voice)
3. Response to visual stimuli
4. Response to noxious stimuli (applied centrally and to each limb individually)

## **B. Cranial Nerves**

1. Response to visual threat
2. Pupillary light reflex
3. Oculocephalic (doll's eyes) reflex
4. Vestibulo-ocular (cold caloric) reflex
5. Corneal reflex
6. Gag reflex

## **C. Motor Function**

1. Voluntary movements
2. Reflex withdrawal
3. Spontaneous, involuntary movements
4. Tone (resistance to passive manipulation)

## **D. Reflexes**

1. Deep tendon reflexes
2. Plantar responses

## **E. Sensation** (to noxious stimuli)

