

Louisiana State University
Health Sciences Center



Department of Neurosurgery
Student Clerkship Guide
2022 – 2023

Introduction

Welcome to LSUHSC New Orleans neurosurgery rotation. Our department is dedicated to excellence in neurosurgical education. During your rotation, you will be a key member on the team assisting with morning rounds, procedures and call. This is a great opportunity: to review neuroanatomy, improve your neurological examination and gain exposure various neurosurgical problems. If you have any suggestions for improving the rotation experience, please let us know. We are also here to learn and improve the student experience. We hope that you enjoy your rotation with us!

Resources

For those of you who are seriously considering neurosurgery as their career, we recommend purchasing the Handbook of Neurosurgery by Mark Greenburg, MD. During the rotation, you may be asked to review imaging studies. A helpful website is radiopaedia.org (<http://radiopaedia.org/encyclopaedia/all/all>). There are some smartphone apps that may be helpful. One popular app is 'Neurosurgery Survival Guide.

Locations

Students typically split their time between University Medical Center (UMC) and West Jefferson Hospital. The program coordinator will send you the email addresses of the lower levels and chiefs on at each hospital. Please ensure that they contact you about when and where to meet on your first day. Friday conferences/grand rounds are held either at UMC, Lions building 6th floor in neurosurgery conference room, or West Jefferson.

UMC: We usually operate on Tuesday-Friday in OR 1 and 2. You will have a chance to assist and interact with residents and faculty after morning rounds in TICU. UMC clinics are held on Wednesdays.

WJ: Be sure to obtain the ID card from Ms. Grinesha White (grinesha.white@LCMHealth.org) prior to going into the OR on the first day; the nurses will check your name into the system. The OR atmosphere here is different from UMC, so be sure to ask the nurses if it's ok to grab gloves or anything else off of their table.

Opportunities and expectations

Neurosurgery can be a demanding field. The hours can be long. We expect hard work from our students. However, we also like to give you a unique experience as a third year medical student. You will have an opportunity to participate in the care of ICU patients and be an active participant in surgery. We expect you to take care of at least two patients. Gather laboratory data, review imaging, examine the patient and have a systems-based assessment and plan ready for morning rounds with the chief. Figure out what cases are booked for the next day (for UMC, look at the "OR at a glance" tab in Epic & for WJ, ask the OR front desk) and read about the surgery. In the OR, you will be expected to know how to tie a knot at the very least. You may have the opportunity to do

much more. You need to pick up any patient on whom you've operated and continue to round on them.

Be prepared to take at least one weeknight call and one weekend call, more if you're interested in neurosurgery. Call is from home. It can be very busy at times requiring overnight patient management in the hospital. Also, if you are interested in the field, you will be expected to give a presentation (in PowerPoint format) on your last Friday on service.

The Congress of Neurological Surgeons published medical student curriculum that may serve as a guide during your rotation. A modified version that focuses on what we think is important is below. Note that each topic is more thoroughly covered on their website and we recommend that you navigate through this website during your time here: <http://w3.cns.org/medStud/index.asp>

Medical Student Curriculum in Neurosurgery

A. General Skills Topics

1. The Neurological Examination
 1. Be able to accurately state the patient's GCS
 2. Examine cranial nerves
 3. Evaluate peripheral motor function
 4. Evaluate reflexes and long tract signs (Hoffman's, Babinski, clonus)
2. Fundamentals of Neuro-Imaging
 1. Basic CT head evaluation
 - A. Trauma: epidural, subdural, intraparenchymal, subarachnoid hemorrhage
 - B. Aneurysmal or other intracerebral hemorrhages
 - C. Tumors or other masses
 2. Basic spine CT evaluation
 - A. Alignment
 - B. Fracture types, stable vs unstable
 3. Head & spine MRI
 - A. This will be taught during the rotation
3. Intracranial hypertension
 1. Understand the pathophysiology of elevated intracranial pressure, cerebral perfusion and the influence of blood pressure, blood gases, and fluid and electrolyte balance.
 2. Recognize the clinical manifestations of acute brain herniation including the Cushing reflex, midbrain effects and vital signs.

B. Intracranial Disease Topics

1. Diagnosis and Management of Head Trauma

1. Be able to state the criteria for intracranial pressure monitor insertion in trauma
 2. State the different steps to manage increase intracranial pressure
 3. Recognize and initiate management of acute subdural and epidural hematoma, including surgical indications.
 4. Recognize and initiate management of penetrating trauma including gunshot wounds.
2. Diagnosis and Management of Brain Tumor and Abscess
 1. List the most common brain tumors, both primary and secondary
 2. Understand the different presentations of brain tumors
 3. State the surgical indications for brain tumors and the other treatment options
 4. Be able to differentiate between the different types of intracranial infections
 5. Understand the differences in presentation, imaging and treatment of abscesses versus tumors.
 6. State the differential for an intracranial mass in an immunocompromised individual
3. Diagnosis and Management of Intracranial hemorrhage
 1. Know the major causes of intracranial hemorrhage: vasculopathy in the elderly (hypertension and amyloidosis), aneurysm, vascular malformation, tumor and coagulopathy.
 2. Be able to accurately describe the different types of hemorrhage on CT scan
 3. Know how to apply different modalities in workup of aneurysmal SAH (CT, CTA, MRA, angiogram)
 4. Know the different treatment options of ruptured and unruptured intracranial aneurysms
 5. Know the ICU management of ruptured intracranial aneurysms
 6. Be able to state the treatment options of other intracranial vascular malformations (AVMs, cavernomas).
4. Diagnosis and Management of Ischemic Cerebrovascular Disease
 1. Recognize the symptoms and signs of anterior and posterior circulation ischemia.
 2. Know the treatment options for carotid stenosis, embolic stroke and intracerebral arterial ischemia.
- C. Spinal disease
1. Diagnosis and Management of Spinal Cord Injury
 1. Know the steps of initial workup and management of spinal cord trauma
 2. Be able to recognize spinal column injuries on CT. Know which require operative management.
 3. Understand the different operative approaches for traumatic spinal column injuries

4. Be able to manage patients with spinal cord injuries in the long term. What complications can arise?
2. Diagnosis and Management of Nontraumatic Neck and Back Problems
 1. Recognize the symptoms of degenerative spine disease. Differentiate axial from radicular symptoms.
 2. Be able to recognize a patient with cauda equina syndrome (and those without).
 3. State which degenerative spine pathologies improve with surgical intervention.
 4. Be able to recognize myelopathic signs and symptoms
 5. Understand how to correlate imaging findings to a clinical picture
 6. Know the basic anatomy and surgical approaches to treating degenerative spine disease.
- D. Peripheral nerve disease
1. Diagnosis and Management of Peripheral Nerve Injury and Entrapment
 1. Know which types of peripheral nerve injuries are treated acutely and which are followed with EMG.
- E. Other common neurosurgical problems
1. Diagnosis and Management of Hydrocephalus
 1. Recognize the symptoms and signs of hydrocephalus in children and adults
 2. Understand common etiologies of hydrocephalus in children and adults, and differentiate between communicating and obstructive hydrocephalus.
 3. Understand treatment strategies for hydrocephalus.
 4. Recognize common syndromes of spinal dysraphism, their neurologic manifestations and broad principles of management.

We thank you for your interest in the LSU Neurosurgery Department and we hope you have a great rotation. Please do not hesitate to contact the department if you have any questions.

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