General Surgery Residency
Loma Linda University

Neurosurgery Goals and Objectives

PGY 1

Goals:

Loma Linda University Medical Center will provide a learning environment for the care, treatment and follow up of neurosurgery patients. Surgical basic science including fluids, electrolytes, wound healing and nutrition, will be emphasized. Clinically, residents will assess surgical pathology pre-operatively, develop clinical judgment on managing these issues, and learn operative skills to address the problem. Careful postoperative care and follow up will be emphasized.

Objectives:

Medical Knowledge

1. Demonstrate an understanding of a comprehensive neurological evaluation including an accurate history and physical examination.

2. Demonstrate a working knowledge of the role of the following diagnostic modalities in the evaluation of patients with neurosurgical problems:
   a. plain skull radiographs
   b. plain spine radiographs
   c. CT scan of head or spine
   d. MRI
   e. cerebral arteriography

3. Discuss the management of head injuries to include:
   a. selection, prioritizing, and performance of resuscitation efforts
   b. analyzing components and results of baseline neurological examination to determine and evaluate changes in patient’s neurological status
c. treatment of a scalp wound
d. initial treatment of compound depressed skull fractures
e. management of increased intracranial pressure
f. recognition of cerebral herniation syndromes
g. initiation, management, and interpretation of intracranial pressure monitoring
h. recognition and initial management of post-traumatic intracranial hemorrhage

4. Discuss the management of cervical and lumbar disc disease including:
   a. conservative management (traction, rest, physical therapy, analgesic medications)
   b. selection and usefulness of radiologic modalities (plain spine films, CT, MRI, myelography)
   c. indications for surgical management

5. Discuss the description and diagnosis of intracranial and intraspinal mass lesions (neoplasm, abscess, hematoma) including:
   a. signs and symptoms of intracranial and intraspinal mass lesions
   b. pathophysiology of intracranial and intraspinal abscess
   c. pathophysiology of spontaneous intracranial and intraspinal hemorrhage
   d. pathophysiology of hydrocephalus

6. Demonstrate an understanding of the critical issues associated with closed head injury including:
   a. coma
   b. brain swelling
   c. increased intracranial pressure
   d. ICP monitoring
   e. cerebral perfusion
   f. hyperventilation
7. Demonstrate an understanding of the critical issues associated with spinal cord injury including:
   a. recognition of neurological deficit from cord and/or root injury at various levels
   b. spinal stabilization including the use of tongs or halo
   c. pathophysiological responses in the acute quadriplegic or paraplegic patient
   d. respiratory problems
   e. use of corticosteroids
   f. urinary bladder dysfunction

8. Demonstrate the ability to recognize and manage the following problems commonly encountered in neurosurgical patients:
   a. hyponatremia
   b. water intoxication
   c. SIADH
   d. hypopituitarism
   e. hypoadrenalism

9. Understand the clinical definition of brain death.

10. Demonstrate an understanding of the importance of early referral of head and spinal cord injury patients to rehabilitation services and the potential impact upon long-term prognosis.

11. Perform neurological history and examination of patients at various levels of consciousness.

12. Assist during neurosurgical procedures, gaining exposure to:
   a. craniotomy, laminectomy
   b. neurosurgical hemostasis
c. protection of neural tissues

d. repair/replacement of dura and bone

13. Perform limited neurosurgical procedures under appropriate supervision:

   a. diagnostic lumbar puncture
   
   b. insertion of ICP monitor
   
   c. repair of scalp lacerations
   
   d. application and management of skeletal traction by tongs or halo

**Patient Care**

Establish basic proficiency in providing pre-operative and post-operative care (writes appropriate pre-op and post-op orders for floor patients, handles nursing calls appropriately, and manages most routine post-operative care with minimal intervention by supervisor).

Take an appropriate history to evaluate patients with neurosurgical issues to include:

   a. A complete history of present illness
   
   b. Presence of any co-morbidities
   
   c. A review of social and family history impacting the present problem
   
   d. A complete review of systems

Develop a proficiency in evaluation and interpretation of the different diagnostic modalities including: X-rays, ultrasounds, CT scans, Contrast studies and MRIs.

Discuss treatment options, risks and potential complications of patients with neurosurgical issues.

Assist in the performance of neurosurgical procedures.

Recognize and manage postoperative surgical complications, including wound infection, dehiscence and leaks, and lymphocele, seroma and hematoma formation.

Demonstrate skill in basic surgical techniques, including:

- Knot tying
- Exposure and retraction
- Knowledge of instrumentation
- Incisions
- Closure of incisions
- Handling of graft material including mesh
- Establishing pneumoperitoneum
- Handling of laparoscopic instruments
- Handling of the laparoscopic camera

Coordinate pre and post-surgical operative care for patients in the neurosurgery rotation.

Assist in closure of surgical incisions and exhibit competency in suture technique.

Be able to apply and remove all types of dressings.

Make and close a variety of incisions and tie knots using sterile technique.

**Professionalism**

The Resident should be receptive to feedback on performance, attentive to ethical issues and be involved in end-of-life discussions and decisions.

Understand the importance of honesty in the doctor-patient relationship and other medical interactions.

Treat each patient, regardless of social or other circumstances, with the same degree of respect you would afford to your own family members.

Learn how to participate in discussions and become an effective part of rounds, attending staff conference, etc.

Complete all assigned patient care tasks for which you are responsible or provide complete sign out to the on-call resident.

Maintain a presentable appearance that sets the standard for the hospital that includes but is not limited to adequate hygiene and appropriate dress. Scrubs should be worn only when operating or while on call.

Assist with families of critically injured/ill patients and guidance of families towards or through difficult decisions.

Demonstrate mentoring and positive role-modeling skills.

Provide an appropriate orientation and guide all medical student as to their roles and responsibilities during the rotation.

Provide an appropriate orientation to other PGY 1’s that are about to rotate through the neurosurgery service.
**Systems-Based Practice**

Understand, review, and contribute to the refinement of clinical pathways

Understand the cost implications of medical decision-making

Partner with health care management to facilitate resource efficient utilization of the hospital’s resources.

Describe in general terms the benefits of clinical pathway implementation

Develop a cost-effective attitude toward patient management.

Develop an appreciation for the benefits of a multi-disciplinary approach to management of critically ill surgical patients.

Comply with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) regulations regarding patient privacy and confidentiality.

Demonstrate knowledge in steps and conduct during major surgical procedures.

Have clear indications and know when it is appropriate to perform a surgical procedure.

Have an understanding of when it is not appropriate to operate.

Demonstrate knowledge of steps to be taken to have a patient ready for surgery including preop workup and medical clearance.

**Practice-Based Learning & Improvement**

Demonstrate the ability to:

- Evaluate published literature in critically acclaimed journals and texts
- Apply clinical trials data to patient management
- Participate in academic and clinical discussions

Accept responsibility for all dimensions of routine patient management on the wards

Apply knowledge of scientific data and best practices to the care of the surgical patient

Facilitate learning of medical students and physician assistant students on the team.

Use the LLUMC library and databases on line resources to obtain up to date information and review recent advances in the care of the surgical patient.

Demonstrate a consistent pattern of responsible patient care and application of
new knowledge to patient management.

Demonstrate a command and facility with on line educational tools.

**Interpersonal & Communication Skills**

Work as effective team members

Cultivate a culture of mutual respect with members of nursing and support staff

Develop patterns of frequent and accurate communication with team members and attending staff

Gain an appreciation for both verbal and non verbal communication from patients and staff

Demonstrate consistent respectful interactions with members of nursing and support staff

Demonstrate consistent, accurate and timely communication with members of the surgical team

Demonstrate sensitivity and thoughtfulness to patients concerns, and anxieties.

The resident will demonstrate the ability to provide and request appropriate consultation from other medical specialists.