

## **CURRICULUM: NEUROLOGY**

### **I GOAL**

To give medical residents the opportunity to learn the basic clinical neurology needed to practice Internal Medicine.

### **II. CONTENT**

#### **A. HISTORY TAKING IN NEUROLOGY PATIENTS**

#### **B. PHYSICAL EXAMINATION**

1. Mental status testing
2. Language testing
3. Tests of orientation and visual spatial abilities
4. Cranial nerve examination
5. Motor system
6. Gait
7. Coordination
8. Sensory
9. Relevant aspects of the general medical examination
  - a) Carotid artery examination
  - b) Physical findings germane to particular clinical situations

#### **C. CATEGORIES OF NEUROLOGIC DISEASE**

1. Headache
2. Cerebral vascular disease
3. Dementia
4. Movement disorders
5. Demyelinating disorders
6. Epilepsy
7. Altered states of consciousness including coma and toxic and metabolic encephalopathies
8. Developmental disorders
9. Infections of the Nervous system
10. Neurological emergencies including head trauma, acute cord compression, acute stroke
11. Neuromuscular diseases
12. Diseases of the spine

#### **D. ANCILLARY TESTS OF THE NERVOUS SYSTEM**

1. Neuroimaging
2. Angiography
3. EEG
4. EMG
5. Evoked Potentials
6. Tensilon test
7. ENG
8. Carotid duplex studies
9. Anticonvulsant drug levels
10. Muscle and nerve biopsy
11. Myelography
12. Sleep studies
13. Cold water calories

- E. REHABILITATION
  1. Criteria for in-patient rehabilitation
  2. Optimizing patient function
  3. Role of allied health professional-physical therapy, occupational therapy, speech therapy
  4. Natural history of common neurological disease

- F. ETHICS

In neurology, we commonly face ethical dilemmas in decision making of the comatose patient, the severely demented patient and the non-compliant patient. The resident will be familiar with definition of brain death and how the diagnosis is made.

### III. TEACHING METHODS

Neurology is learned primarily by the case based approach. This will be accomplished in two ways:

1. A series of didactic lectures
2. The opportunity to have a one month elective rotation on the neurology consult service at Saint Luke's Medical Center and St. Vincent Charity Hospital.

- A. DIDACTIC LECTURES - a series of 12 one-hour didactic lectures are planned regularly throughout the academic year. The following topics will be covered:

1. Neurologic history and examination
2. Neurologic emergencies including CNS infection, spinal cord compression, epidural abscess, status epilepticus, SAH and other bleeds, GBS-respiratory and autonomic aspects, as well as prognosis of diseases - could be two sessions
3. Dementias, encephalopathies, and TGA, acute confusional state
4. Epilepsy
5. Neuromuscular disease
6. Movement disorders-PD, tremor
7. Sleep disorders
8. Vertigo
9. Neurologic tests - CT, MRI, EMG, EEG, caloric stimulation, tensilon test, ENG, imaging
10. Pain management
11. Rehabilitation - the roles of physical, occupational and speech therapy

Cases are also encountered in morbidity and mortality conferences. Review articles from the neurologic literature will also be discussed at Journal Club.

Neurologic topics will also be covered in Medical Grand Rounds.

- B. ROTATION:

During the month rotation, the resident will have both outpatient and inpatient experiences.

1. Ambulatory: The resident on the neurology service will participate in the neurology teaching clinic every Wednesday afternoon alternating at Saint Luke's Medical Center or St. Vincent Charity Hospital. In this clinic, residents gain experience in common neurological problems including epilepsy, headaches, chronic pain, neuromuscular disorders, MS, movement disorders.

Residents also have the opportunity to participate in the clinical practice of the neurologist on service. They should observe at least one EMG during the rotation.

2. Inpatient: On the inpatient service, the resident will see all neurological consultations initially and present the cases to the attending physician. The resident will perform a history and neurologic exam, review old medical records and current records, laboratory and imaging tests. The patient will be examined by the attending neurologist with the resident and the case will be discussed in detail - the history, the physical findings, anatomical localization, the differential diagnosis, and a diagnostic and therapeutic plan.

The resident is responsible for follow up of patients seen on the consultation service and this will give the resident an opportunity to perform serial neurological examinations as well as to suggest interventions with the guidance of the attending physician.

Clinical problems seen on the inpatient consult service include cerebral vascular disease, epilepsy, encephalopathies (toxic, metabolic and anoxic-ischemic), headache, CNS infections including HIV, as well as neuromuscular diseases. Hospitalized patients with chronic neurologic diseases including dementia, movement disorders, and MS are also seen, frequently with concomitant medical diseases.

Teaching rounds are conducted on Monday, Wednesday, Friday and Saturday. The attending will be available for emergency consultations at other times.

3. General expectations: Tools required for the rotation include an ophthalmoscope, neurologic hammer (a collapsible Queen Square is available on loan), and a 128 Hz tuning fork.

Residents will be expected to read a core of material during their rotation (see references and resources). Videotapes are available for the residents to view in the library or in their home.

Each patient is the hook upon which to hang the resident's knowledge, and the resident should read about the disease process that pertains to each case. The resident has full access to the library resources at Saint Luke's Medical Center including computers with Internet and Medline search services.

An important component of the curriculum will include discussions and review of tests of neurological function. This includes EEG, EMG, MRI, CT, myelography, and angiography. In addition to reviewing studies obtained on the patients from the

inpatient or outpatient services, the role for these tests and cost-effectiveness of these tests will be discussed. The strengths and weaknesses of each test for a given clinical situation will be reviewed.

Another area that will be an integral part of the curriculum will be the assessment of rehabilitation needs for patients. This is an important aspect of neurologic treatment in both the outpatient setting (referrals to physical, speech and occupational therapy, orthopaedic evaluation, and orthotic equipment) and the inpatient setting. The residents will learn the functional requirements for identifying patients who require and will benefit from inpatient rehabilitation (stroke, spinal cord, and geriatric rehabilitation). This teaching will also need to consider the special needs of those patients who require skilled nursing facilities. The costs and benefits of each clinical decision will be explored.

#### **IV. EVALUATION**

##### **A. EVALUATION OF THE RESIDENT:**

This process takes on several forms throughout the rotation. Due to the frequent emergent nature of neurologic consultation, all residents will be observed doing a history and physical exam as part of their consultative work. The written report of the consultation is reviewed for each patient, with particular attention to assessment and suggested plan of action. The residents are also required to present all patients orally to the attending neurologist, thus affording an in-depth opportunity for learning, but also allowing the attending physician to ascertain the resident's progress throughout the rotation. A written pre- and post-rotation examination will be given to the resident so that the resident can gauge his/her strengths and weaknesses in their preparation for board review.

##### **B. EVALUATION OF THE ROTATION:**

The effectiveness of the teaching on the rotation will be assessed using several methods. We evaluate performance on the "Inservice Exam" and the American Board of Internal Medicine exam, both amongst residents who have had neurology and those who have not taken the rotation. Residents are also polled regarding whether Medical Grand Rounds and other conferences have met their educational goals, and are asked to provide input regarding improvements in format and content.

#### **BIBLIOGRAPHY**

##### **References / Resources**

1. *Harrison's Principles of Internal Medicine*, Fauci, A., 14th edition. McGraw-Hill, 1997
2. *Neurology*, House Officer Series, 1995
3. *Merritts Textbook of Neurology*, Rowland A., 9th edition. Lea & Febiger, 1995
4. MKSAP

##### **Videotapes**

1. Common Movement Disorders. Raven Press, 1987.
2. Diagnosis of Seizures and Epilepsy. Epilepsy Foundation of America.
3. Management of Seizures and Epilepsy. Epilepsy Foundation of America.