

## **Neurology Curriculum**

### **Goal**

Neurology encompasses the prevention and management of disorders of the central and peripheral nervous systems. Other conditions, such as headache, may be caused by non-neural dysfunction but are often considered under the category of neurology.

Rotation on the medical ward services, in general medical clinic and on neurology service will provide training for the resident to develop a wide range of competencies necessary for the clinical diagnosis and management of common neurologic disorders. He or she should be able to (1) understand risk factors for the development and/or exacerbation of neurologic diseases and become competent in primary and secondary prevention, (2) become proficient in performing and interpreting a detailed neurologic exam, (3) diagnose and treat neurologic diseases commonly encountered in a general internal medicine practice, (4) recognize the need for and appropriate timing of neurology referral.

The internist will usually be assisted by the neurologist for diagnostic procedures and the management of complicated neurologic conditions, such as status epilepticus. If such expertise is not available, the internist, with additional training, may have to assume this role.

### **Objectives**

#### **Patient Care**

- I. Provide patient care that is compassionate, appropriate and effective for the prevention and treatment of neurologic disorders.

#### **Medical Knowledge**

- I. Develop the knowledge and skills to obtain an appropriate history on patients at risk for or with neurologic disease.
- II. Develop the knowledge and skills for performing and interpreting physical exam findings on patients with neurologic complaints.
  - a. Become proficient in performing a complete, efficient neurologic exam.
  - b. Recognize findings indicative of systemic disease involving the nervous system.
  - c. Differentiate neurologic from psychiatric disease
  - d. Understand the most useful physical exam findings to elicit in a coma patient.
  - e. Understand the exam findings required for a diagnosis of brain death.
- III. Develop an approach to patients with common complaints associated with disease of the nervous system, including:
  - a. abnormal speech
  - b. abnormal vision
  - c. altered mental status

- d. altered sensation
  - e. back pain
  - f. disturbed gait or coordination
  - g. dizziness
  - h. facial pain
  - i. headache
  - j. hearing loss
  - k. localized pain syndromes: facial pain, radiculopathy
  - l. loss of consciousness
  - m. memory impairment
  - n. seizure
  - o. sleep disorder
  - p. syncope
  - q. tremor
  - r. vertigo
  - s. weakness/paresis (generalized, localized)
- IV. Recognize risk factors, symptoms and signs, differential diagnosis and management of the following diseases:
- a. acute and chronic inflammatory demyelinating polyneuropathies
  - b. amyotrophic lateral sclerosis
  - c. benign positional vertigo
  - d. dementia
  - e. dermatomyositis/polymyositis
  - f. dystonic reaction
  - g. encephalitis and meningitis
  - h. encephalopathy – toxic metabolic, hypertensive, Wernicke’s
  - i. essential tremor
  - j. headaches – migraine, tension, post-lumbar puncture
  - k. lumbar/cervical disc disease
  - l. multiple sclerosis
  - m. muscular dystrophy
  - n. myopathies
  - o. neoplastic disorders: primary brain tumors, metastases and paraneoplastic syndromes
  - p. neurologic manifestations of HIV
  - q. neuropathies
  - r. optic neuritis
  - s. Parkinson’s disease
  - t. periodic paralysis
  - u. post-polio syndrome
  - v. seizure disorders including pseudoseizures and status epilepticus
  - w. stroke – ischemic and hemorrhagic
  - x. transient ischemic attack
  - y. transverse myelitis
  - z. Trigeminal neuralgia

- aa. Zoster and post-herpetic neuralgia
- V. Understand appropriate use and interpretation of diagnostic studies, including:
  - a. CSF analysis
  - b. vitamin B12
  - c. thyroid function tests
  - d. VDRL, FTA, RPR
  - e. Anticonvulsant drug levels
  - f. Westergren sedimentation rate
  - g. ANA
  - h. Screen for toxins, heavy metals
  - i. Electroencephalography with evoked potentials (visual, auditory, sensory)
  - j. Electromyography
  - k. Nerve conduction studies
  - l. Carotid doppler
  - m. Cerebral angiogram
  - n. Computed tomography of head
  - o. Magnetic resonance imaging and angiography of head
  - p. Tensilon (edrophonium chloride) test
  - q. Muscle biopsy
  - r. Myelography
  - s. Polysomnography
  - t. Vestibular function tests
  - u. Visual field testing
  - v. Audiometry
  - w. Neuropsychologic testing
- VI. Develop competence in the following procedures:
  - a. caloric stimulation test
  - b. lumbar puncture

### **Practice-Based Learning and Improvement**

- I. Be able to access clinical practice guidelines to help improve care of neurology patients.
  - a. American Heart Association - [www.americanheart.org/presenter.jhtml?identifier=3004586](http://www.americanheart.org/presenter.jhtml?identifier=3004586)
- II. Perform independent research for evidence-based practice to answer specific clinical questions arising from patient care.
- III. Review patient care errors with attention to changes in systems to prevent recurrence.
- IV. Utilize information technology to enhance patient education.

### **Interpersonal and Communication Skills**

- I. Communicate effectively with patients and families in a compassionate, culturally sensitive and patient-centered manner to improve understanding and compliance.

- II. Ensure charting is legible, thoughtful, complete and timely to facilitate communication within the health care team.

### **Professionalism**

- I. Understand impact of gender, age, culture, religion, and socioeconomic status on patient choices regarding therapies.
- II. Understand how to inform patients regarding the natural history of their disease and risks and benefits of proposed therapies e.g. t-PA for informed consent..
- III. Provide meaningful feedback to colleagues and students regarding performance and behavior.

### **Systems-Based Practice**

- I. Facilitate patient interaction with the neurologist, nurses, social workers and billing coordinators to ensure optimal care.
- II. Develop skills in identifying opportunities for quality improvement, risk management and cost-effectiveness within a practice.

### **Teaching Methods**

- I. Attending supervision of resident activities in patient care
- II. Teaching rounds
- III. Case –based rounds with the neurologist and radiologist to review imaging studies.
- IV. Conferences
- V. Recommended reading

### **Resident Evaluation**

- I. Attending feedback to residents on strengths and weaknesses throughout the rotation
- II. Attending written evaluation of residents at the end of the rotation
- III. Mini-CEX bedside evaluation tool

### **Resources**

*Harrison's Principles of Internal Medicine*, 15<sup>th</sup> ed. McGraw Hill, 2001.

*Cecil Textbook of Medicine*, 21<sup>st</sup> ed, Saunders, 2000.

#### On-line Resources

- UptoDate
- MDConsult
- American Heart Association -[www.americanheart.org](http://www.americanheart.org)

Residents should review Annals of Internal Medicine for recent Updates in Neurology section as well as ACP journal club for pertinent articles.

