

Geriatric Neurology Core Content and Core Curriculum

I. CORE CONTENT

I. Scientific Basis of the Aging Nervous System

A. Review of Neuroanatomy

1. Cerebral cortex
2. Basal ganglia/Thalamus
3. Brainstem
4. Cerebellum
5. Spinal Cord
6. Peripheral nervous system
7. Neurochemistry – neurotransmitters, neuropeptides, neurohormones
8. Cerebrovascular

B. Changes associated with the Aging Nervous System

1. Cognition
2. Cranial Nerves
3. Motor
4. Sensory
5. Cerebellar
6. Reflexes
7. Gait
8. Primitive reflexes
9. Basal Ganglia

II. Neurologic Assessment of Older Adult

A. Neurological Examination

1. Elemental neurological function
2. Neurological “soft-signs”
3. Standardized rating scales

B. Mental Status Examination

1. General assessment
2. Behavioral assessment
2. Cognitive examination
3. Informant assessments
4. Clinical interpretation

C. Neuropsychological Assessment

1. Attention, Orientation and Concentration
2. Language and communication

3. Verbal and Episodic Memory
4. Executive Abilities
5. Visuospatial abilities

D. Specialized Assessments

1. Extrapyrarnidal signs and the Unified Parkinson Disease Rating Scale (UPDRS)
2. Gait patterns
3. Autonomic assessments
4. "Cortical" Sensory function
5. Sleep Studies
6. Electrophysiology

E. Neuroimaging

1. Principles and applications of structural and functional imaging
 - a. CT
 - b. MRI / Volumetric MRI
 - c. PET/SPECT/DAT
 - d. Amyloid Imaging - PIB, AV45
2. Correlation between neuroimaging and clinical examination

F. Laboratory Studies

1. Indications for serum and urine studies
2. Indications for and interpretation of results from CSF examinations

III. Geriatric Neurology Syndromes

A. Cognitive disorders

1. Acute confusional states/Delirium
2. Mild cognitive impairment
3. Alzheimer's disease
4. Dementia with Lewy bodies
5. Vascular dementia
6. Frontotemporal dementia and progressive aphasia
7. Prion diseases
8. Normal Pressure hydrocephalus
9. Traumatic brain injury

B. Neuropsychiatric Syndromes

1. Agitation
2. Substance abuse and dependence
3. Disorders of mood/affect
4. Anxiety disorders
5. Psychotic disorders
6. Personality disorders and personality change due to neurological/medical conditions

C. Cerebrovascular disease

1. Vascular risk factors

2. Transient ischemic attacks
3. Stroke
4. Cerebral amyloid angiopathy/cerebral hemorrhages
5. Subdural hematomas

D. Movement Disorders/Gait disorders

1. Parkinson's disease/Parkinsonism
2. Essential Tremor
3. Progressive Supranuclear Palsy
4. Corticobasal Degeneration

5. Gait disorders/mobility

E. Sleep disorders

1. Sleep apnea
2. REM behavioral disorder
3. Insomnia
4. Restless legs syndromes
5. Nocturnal cramps
6. Medication-induced sleep disturbances

F. Autonomic dysfunction

1. Orthostasis
2. Bowel disorders
3. Sexual dysfunction

G. Paroxysmal Disorders

1. Epilepsy
2. Positional vertigo
3. Syncope

H. Sensory disorders

1. Visual
2. Auditory
3. Somatosensory
4. Olfaction and taste

I. Other disorders and syndromes that occur in geriatric populations

1. Demyelinating disorders
2. Primary and secondary brain tumors
3. Central nervous system infections
4. Neuroendocrine disorders
5. Headache
6. Falls
7. Dizziness
8. Acute and chronic pain

9. Frailty
10. Disorders of the spinal cord, nerves and muscle

IV. Treatment and Management

A. Pharmacological Approaches

1. Cognitive agents
2. Dopaminergic agents
3. Vascular approaches (statins, aspirin, etc)
4. Psychopharmacology
5. Bladder dysfunction
6. Orthostatic hypotension
7. Sexual dysfunction
8. Sleep aids
9. Drug-drug interactions

B. Nonpharmacological Approaches

1. Behavioral therapy
2. Other therapy modalities (art, music, recreation)
3. Environmental interventions

C. Psychosocial Interventions

1. Supportive therapy
2. Caregiver burden/stress
3. Long term care referrals
4. Interdisciplinary approaches to case management including medication compliance

D. Ethical and Legal Issues

Geriatric Neurology Core Curriculum

I. CORE CURRICULUM

1. Program Content

Geriatric Neurology focuses on neurologic disorders that affect older adults. It requires understanding the effects of normal aging on the nervous system and its age-related vulnerabilities, the disorders that frequently affect the elderly, and the specialized methods for assessment, diagnosis, treatment and management of neurological disorders in this unique population. The neurological conditions of interest to Geriatric Neurology include cognitive dysfunction and dementia, movement disorders, stroke and its chronic effects, gait and balance disturbance, seizures and other episodic disorders of consciousness, depression and other psychiatric illness of old age, autonomic dysfunction, disorders of muscle and peripheral nerves, frailty, and pain, among others.

Geriatric Neurology shares common interests with several neurological subspecialty areas such as behavioral neurology, movement disorders, stroke, and rehabilitation. Geriatric Neurology also overlaps with the medical subspecialty of Geriatric Medicine and the psychiatric subspecialty of Geriatric Psychiatry but is distinguished by its neurological focus. The unique perspective of Geriatric Neurology is the interaction of age with disorders of the nervous system, whereas other subspecialty areas have the disorder as the primary focus. The subspecialty of Geriatric Neurology highlights the special neurological health needs of the elderly population. At the same time, it addresses the co-morbid medical and neuropsychiatric conditions in persons in this age group and the often-concomitant functional disabilities. By virtue of its emphasis on the neurology of aging nervous system, Geriatric Neurology embraces interdisciplinary collaboration with general neurology, other neurology subspecialty areas, and related disciplines.

2. Goals

The number of persons in the United States over the age of 65 will double in the next 50 years, with those over the age of 85 comprising the most rapidly growing group. Some neurological diseases in the elderly can be modified or prevented through diet, exercise, cessation of smoking, and management of medical disorders. However, in the absence of preventative or ameliorative therapy, particularly with respect to the neurodegenerative diseases, the number of persons with age-related neurological conditions will increase greatly over the next decades. The field of Geriatric Neurology has grown dramatically, concurrent with population trends toward an aging society, the influence of age on the prevalence and expression of many neurological disorders, and the demands of caring for neurologically disabled elderly individuals. Both the

rapidly increasing number of older adults and the chronic nature of many neurological conditions ensure that the already great need for Geriatric Neurology will continue to grow.

Maximizing success in clinical care of the elderly requires specialized expertise in Geriatric Neurology. This includes the ability to work and communicate effectively with other health care providers and an understanding of current research regarding the clinical and scientific basis of aging and age-related neurological dysfunction. The goal of a fellowship program in Geriatric Neurology is the training of neurologists equipped with the knowledge, skills and clinical competence to diagnose, treat, manage and rehabilitate aged persons with neurological dysfunction. The Geriatric Neurology knowledge base and skill set build upon the foundation provided by general neurology residency training.

3. Objectives

The overall objective for subspecialty training in Geriatric Neurology is to provide the knowledge, skills and attitudes most conducive to meet the following goals:

1. Provide high quality clinical care suited to the special needs of the elderly with neurological disorders, including screening, diagnostic cognitive and functional evaluation, treatment, management, supportive counseling, psycho-social intervention and appropriate end-of-life care;
2. Work effectively with multi/inter disciplinary teams oriented to the care of the elderly; and
3. Become leaders in clinical, educational, academic and research arenas.

4. Methods of Training

The fellowship must provide the geriatric neurologist in training with knowledge and skill consistent with high-quality clinical care. The educational program must be organized to provide sufficient clinical, educational, investigative and administrative experience to produce an excellent clinician/educator in the field of Geriatric Neurology. The program should emphasize the scientific basis of aging, clinical assessment of elderly persons, common neurological disorders of the elderly, the manner of presentation of these disorders in aged persons and the special vulnerabilities of the aging nervous system. The program should address the rationale and the methods for providing interdisciplinary care; the appropriate use of methods to diagnose, treat, manage and provide a continuum of care for the elderly with neurological disorders. These topics should be taught in formal didactic sessions as well as informal clinical settings. The fellowship should provide the trainee with the skills needed to pursue clinical research in this field if desired; this goal should be considered separate from the clinical/educator goals.

Through supervised experience, the trainee must acquire a working knowledge of the principles of geriatric care and of the specific neurological disorders common in the elderly population. Clinical experiences for the trainee as a principal care provider and/ or consultant must include the opportunity to examine, diagnose, treat and manage elderly patients with a wide variety of

neurological disturbances. There should be a clinical focus on functional evaluation, treatment, management, counseling and social intervention for elderly persons with acute and chronic neurological disorders. The training program should include the opportunity to manage patients over extended periods of time to observe the progress of neurological disorders as well as the effect of interventions. The age-relevant topics in Geriatric Neurology are listed in the Core Content section.

Optimal care of older adults with neurological dysfunction requires the cooperative interactions of professionals representing various disciplines in health care. A fellowship in Geriatric Neurology will equip the trainee with the capacity to recognize the diverse skills needed for comprehensive care of the elderly with neurological disorders and the ability to work in collaboration with an interdisciplinary team. The trainee should have experience as a team leader and as a team member or consultant. This experience is necessary to foster a comprehensive understanding of the geriatric patient, who is often beset with multiple diagnoses, often atypical neurological and non-neurological symptoms, and the need for modified treatment approaches.

The fellowship should provide adequate time, resources and opportunities for the fellow to develop research, teaching and administrative skills necessary to pursue an independent academic career if interested. The fellowship faculty of the training program must be actively involved in research relevant to Geriatric Neurology, and have demonstrated the ability to obtain funding competitively and to perform credible research published in the peer-reviewed medical literature. There should be ample opportunities for the fellow to develop and practice suitable teaching and presentation techniques. For those fellows interested in an academic career path, additional training focused on research skills with presentation and publication of research results should be considered.

5. Methods of Feedback

Each training program in Geriatric Neurology will be required to collect and collate feedback from faculty and trainees. This feedback is not limited to formal written evaluations, but may include informal interviews with program directors, faculty, and current and past trainees.