

AMERICAN ACADEMY OF NEUROLOGY CRITICAL CARE & EMERGENCY MEDICINE FELLOWSHIP CORE CURRICULUM

Introduction

Many critically ill patients suffer primary or secondary neurologic dysfunction. Through residency training, critical care and emergency neurology fellowships and continuing medical education, the neurological community will need to master a body of knowledge concerning the special care of the critically ill patients with neurological disorders and incorporate this information into clinical practice, education and research. To this end, the members of the Critical Care and Emergency Neurology Section of the American Academy of Neurology have developed a core curriculum for critical care and emergency neurology. This curriculum is intended to serve principally as a tool for programs developing fellowships in critical care and emergency neurology. It also can serve as a guideline for the integration of the critical care and emergency neurology knowledge base and related skills in to the education of medical students, residents, fellows, and other medical and allied health care providers desiring education in this area.

Definition

Critical care and emergency neurology is a special area of neurology that focuses on the neurological disorders that affect critically ill patients. These can be primary neurologic disorders or secondary to other systemic diseases and can affect either the central nervous system, the peripheral nervous system or both. It includes understanding the effects of critical illness on the nervous system and the special vulnerabilities of the nervous system of patients in intensive care units and other emergency settings. It requires knowledge of the disorders that frequently occur in these settings, and the methods of diagnosis, assessment, treatment, management and prevention of further injury. Critical care and emergency neurology also involves bridges into many medical and allied health specialties, including critical care medicine, emergency medicine, neurosurgery, nursing and social work. Development of the specialty of critical care and emergency neurology recognizes the special health needs of the population of critically ill patients with neurologic dysfunction, the characteristics of the nervous system in critically ill patients and the need for interdisciplinary collaboration in this field.

Goals and Objectives

The *goal* of the core curricula in critical care and emergency neurology is to guide a training program that will prepare neurologists to competently care for critically ill patients with neurologic disorders. This training must be based on supervised clinical work with increasing responsibility for inpatients. It should include not only the specific diseases of the nervous system of different age groups but also the neurological complications of medical and surgical conditions. Critical care and emergency neurology is particularly a procedure-oriented specialty and basic training in procedures used in neurocritical care must be included. Finally, training must have an option of organized instruction in basic and/or clinical neuroscience' research.

The overall *objective* for specialty training in critical care and emergency neurology is to provide the skills and knowledge necessary to:

1. Provide high quality clinical care and assessments of critically ill patients with neurological disorders, including diagnostic evaluation, treatment, management, counseling and social intervention;
2. Work effectively with multidisciplinary teams oriented to the care of these patients; and
3. Develop the capacity to pursue an academic/research career focusing on neurological dysfunction in critically ill patients.
4. Develop the capacity to teach others in the methods and concepts used in the care of critically ill patients with neurological disorders.

Topics in Critical Care and Emergency Neurology

The topics listed below provide an outline of a core curriculum, in Critical Care and Emergency Neurology, for fellowship training. Many of the topics included can be used for educational programs in Critical Care and Emergency Neurology for medical students, neurology residents, academic neurologists, and neurologists in practice. All educational components of a fellowship program should relate to the program goals listed above.

Brain Death

Coma

Encephalopathies and Delirium

Herniation Syndromes

Hydrocephalus

Intracranial hemorrhages:

Epidural

Subdural

Subarachnoid

Parenchymal (supratentorial, cerebellar, brainstem)

Intraventricular

Cerebral Venous Thrombosis

Acute Anterior Cerebral Artery Occlusion

Acute Carotid Artery Occlusion

Acute Middle Cerebral Artery Occlusion

Acute Basilar Artery Occlusion

Brainstem Infarction

Cerebellar Infarction

Hemispheric Infarction

Acute Spinal Cord Syndromes
Cerebral Blood Flow and Hypoperfusion
Cerebral Metabolism and Oxygen Demand
Cerebral Edema
Syncope

Brain Abscess
Encephalitis: Bacterial and Viral
Meningitis: Bacterial and Viral

Traumatic Brain Injury
Traumatic Spinal Cord Injury

Status Epilepticus

Guillain-Barre' Syndrome
Myasthenia Gravis

Equipment and Technologies: Knowledge of the basic physiology and underlying technical principles.

Cardiovascular and Pulmonary Monitoring Devices
Intracranial Pressure Monitors: Fiberoptic, Intraventricular, and Epidural
Noninvasive Intracranial and Extracranial Vascular Study, Including Transcranial Doppler

General Principles of Management of Critically Ill Neurologic Patients
General Perspectives of Care in Critically Ill Neurologic Patients
Management of Agitation and Pain
Management of Airway and Mechanical Ventilation
Management of Nutrition
Management of Intravascular Volume Status and Blood Pressure
Management of Anticoagulation and Thrombolytic Therapy
Management of Intracranial Pressure
Management of Neurologic Complications in Critically Ill Patients
Management of Post-operative Neurosurgical Patients
Management of Systemic Complications in Critically Ill Neurologic Patients
Management of Pulmonary Complications
Management of Cardiac Complications
Management of Acid-Base Disorders and Hypertonic and Hypotonic States
Management of Gastrointestinal Complications
Management of Nosocomial Infections
Intensive Care Unit Organization and Management
Psychosocial Issues in the Intensive Care Unit
End of Life Decision Making
Transplant and Organ Donation Management

Diagnostic and Therapeutic Procedures

Continuous Jugular Bulb Oximetric Catheter

Lumbar Drains

Noninvasive Intracranial and Extracranial Vascular Study, Including Transcranial Doppler

Administration of IV rt-PA for Ischemic Stroke

Placement of Intracranial Pressure Monitors:

Fiberoptic, Intraventricular, Epidural

Intravenous sedation and paralysis monitored anesthesia care, pharmacologic coma.

General Critical Care Procedures (Including, but not limited to, the Performance and Interpretation of Blood Gases, Insertion of Central Venous or Pulmonary Artery Catheters, Insertion of arterial lines, Endotracheal Intubation, or Ventilator Management)