Neurocritical Care
Written Recertification Examination
Content Outline

REV 11/08/16

The UCNS Neurocritical Care examination was established to determine the level of competence for Neurocritical Care specialists.

The following recertification examination content outline is provided to examination candidates interested in the recertification examination. The content outline consists of two primary categories followed by subcategories.

These questions are designed to test knowledge acquired or maintained as part of continuous medical education while staying current in the practice of Neurocritical Care. The targeted level of expertise is that of a clinically active diplomate who has maintained scholarly interest in the field.

The written examination consists of 150 multiple choice questions. Candidates must have a passing score for both content areas to pass the Neurocritical Care certification examination.

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Percentage of Questions</th>
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<tbody>
<tr>
<td>I. Neurological Disease States</td>
<td>50%</td>
</tr>
<tr>
<td>II. General Medical Critical Care</td>
<td>50%</td>
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I. Neurological Disease States

A. Cerebrovascular Diseases

1. Infarction and ischemia
2. Intracranial hemorrhage
3. Subarachnoid hemorrhage – aneurysmal and other Vascular malformations
4. Dural sinus thrombosis
5. Carotid-cavernous fistulae
6. Cervical and cerebral arterial dissections
B. Neurotrauma

1. Traumatic brain injury
2. Spinal cord injury

C. Disorders, Diseases, Seizures and Epilepsy

1. Seizures and Epilepsy, including status epilepticus
2. Neuromuscular diseases
3. Infections
4. Toxic-metabolic disorders
5. Inflammatory and demyelinating diseases
6. Neuroendocrine disorders

D. Neuro-oncology

1. Brain tumors and metastases
2. Spinal cord tumors and metastases
3. Carcinomatous meningitis
4. Paraneoplastic syndromes

E. Encephalopathies

1. Eclampsia, including HELLP syndrome
2. Hypertensive encephalopathy
3. Hepatic encephalopathy
4. Uremic encephalopathy
5. Hypoxic-ischemic and anoxic encephalopathy
6. MELAS

F. Clinical Syndromes

1. Death by neurologic criteria, end of life issues, and organ donation
2. Minimally conscious
3. Reversible posterior leukoencephalopathy
4. Delirium
5. Targeted temperature management

G. Perioperative Neurosurgical Care

H. Pharmacotherapeutics
II. General Critical Care

A. Cardiovascular

1. Cardiac arrest resuscitation and management
2. Shock and its complications
3. Myocardial infarction and unstable coronary syndromes
4. Neurogenic cardiac disturbances
5. Cardiac rhythm and conduction disturbances; use of antiarrhythmic medications; indications for and types of pacemakers
6. Pulmonary embolism
7. Pulmonary edema: cardiogenic versus noncardiogenic
8. Acute aortic and peripheral vascular disorders
9. Recognition, evaluation and management of hypertensive emergencies and urgencies

B. Respiratory

1. Acute respiratory failure
2. Aspiration
3. Bronchopulmonary infections
4. Upper airway obstruction
5. COPD and status asthmaticus, including bronchodilator therapy
6. Neurogenic breathing patterns (central hyperventilation, Cheyne-Stokes respirations)
7. Mechanical ventilation
8. Pleural diseases
9. Pulmonary hemorrhage and massive hemoptysis
10. Chest X-ray interpretation

C. Renal

1. Renal regulation of fluid and water balance and electrolytes
2. Acute kidney injury
3. Derangements secondary to alterations in osmolality and electrolytes
4. Neurogenic disorders of sodium and water regulation (cerebral salt wasting and SIADH).

D. Systemic Effects and Management of Critical Illness

1. Enteral and parenteral nutrition
2. Endocrine disorders
3. Sedation and analgesia
E. **Infectious Disease**

1. Antibiotics
2. Infection control for special care units
3. Evaluation of fever in the ICU patient

F. **Acute Hematologic Disorders**

1. Acute defects in hemostasis
2. Anticoagulation and fibrinolytic therapy
3. Principles of blood component therapy
4. Hemostatic therapy
5. Prophylaxis against thromboembolic disease
6. Prothrombotic states

G. **Acute Gastrointestinal (GI) and Genitourinary (GU) Disorders**

1. Upper and lower gastrointestinal bleeding
2. Acute and fulminant hepatic failure (including drug dosing)
3. Ileus and toxic megacolon
4. Acute perforations of the gastrointestinal tract
5. Acute vascular disorders of the intestine, including mesenteric infarction
6. Acute intestinal obstruction, volvulus
7. Pancreatitis
8. Obstructive uropathy, acute urinary retention
9. Urinary tract bleeding

H. **Immunology and Transplantation** (includes H, I & J)

2. Immunosuppression, especially the neurotoxicity of these agents

I. **General Trauma and Burns**

1. Initial approach to the management of multisystem trauma
2. Skeletal trauma including the spine and pelvis
3. Chest and abdominal trauma - blunt and penetrating
4. Burns and electrical injury

J. **Monitoring** (Topics covered within the content areas)

1. Neuromonitoring
2. Prognostic, disease severity and therapeutic intervention scores
3. Principles of electrocardiographic monitoring
4. Invasive hemodynamic monitoring
5. Noninvasive hemodynamic monitoring
6. Respiratory monitoring (airway pressure, intrathoracic pressure, tidal volume, pulse oximetry, dead space, compliance, resistance, capnography)
7. Metabolic monitoring (oxygen consumption, carbon dioxide production, respiratory quotient)
8. Use of computers in critical care units for multimodality monitoring

K. Administrative and Management Principles and Techniques
1. Organization and staffing of critical care units
2. Collaborative practice principles, including multidisciplinary rounds and management
3. Emergency medical systems in prehospital care
4. Performance improvement, principles and practices
5. Principles of triage and resource allocation, bed management
6. Medical economics: health care reimbursement, budget development

L. Ethical and Legal Aspects of Critical Care Medicine
1. Death and dying
2. Forgoing life-sustaining treatment and orders not to resuscitate
3. Rights of patients, the right to refuse treatment
4. Living wills, advance directives; durable power of attorney
5. Terminal extubation and palliative care
6. Rationing and cost containment
7. Emotional management of patients, families and caregivers
8. Futility of care and the family in denial