



## **American Board of Psychiatry and Neurology, Inc.**

A Member Board of the American Board of Medical Specialties (ABMS)

### **SUBSPECIALTY CERTIFICATION EXAMINATION IN NEUROCRITICAL CARE**

The American Board of Psychiatry and Neurology, Inc. (ABPN) is a not-for-profit corporation dedicated to serving the public interest and the professions of psychiatry and neurology by promoting excellence in practice through certification and continuing certification processes.

The neurocritical care certification examination is developed jointly by the American Board of Anesthesiology, the American Board of Emergency Medicine, the American Board of Internal Medicine, the American Board of Neurosurgery, and the American Board of Psychiatry and Neurology. The examination is designed and developed to assess the knowledge and reasoning skills needed to provide high quality patient care in the broad domain of the subspecialty.

Candidates should use the detailed content outline as a guide to prepare for the certification examination. Please note that no single examination tests everything on the content outline.

For more information, please contact us at [questions@abpn.com](mailto:questions@abpn.com) or visit our website at [www.abpn.com](http://www.abpn.com).



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

### SUBSPECIALTY CERTIFICATION EXAMINATION IN NEUROCRITICAL CARE Content Blueprint

<b>Number of questions: 270</b>	
1. Principles of neurocritical care	42-48%
2. Diagnostic studies and procedural skills	13-17%
3. Neurocritical care diseases	27-33%
4. Neurosurgical and perioperative complications	3-7%
5. Ethics, research, and practice-based learning	3-7%
<b>TOTAL</b>	<b>100%</b>

**Note:** A more detailed content outline is shown below.



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

### SUBSPECIALTY CERTIFICATION EXAMINATION IN NEUROCRITICAL CARE Content Outline

Content Areas	
<b>01. Principles of neurocritical care</b>	
A.	Neurological examination in the ICU
B.	Cerebral physiology (including intracranial pressure, cerebral blood flow/autoregulation)
C.	CSF physiology
D.	Principles of neuropharmacology
1.	Osmotic agents
2.	Anti-seizure drugs
3.	Anesthetics
4.	Antihypertensives
5.	Vasopressors
6.	Inotropes
7.	Sedatives
8.	Pain medications (neuropathic pain)
9.	Paralytic drugs
10.	Thrombolytics
11.	Anticoagulants and antiplatelets
12.	Reversal of anticoagulation after acute hemorrhage
E.	Analgesia and sedation
F.	Airway management (including indications and complications of tracheostomy)
G.	Mechanical ventilation
1.	Hemodynamic monitoring
2.	Non-invasive hemodynamic monitoring
H.	Hemodynamic support
1.	Indications for intra-aortic balloon pump
2.	Indications for temporary ventricular support devices
3.	Indications for ECMO (VV and VA)
4.	Neurological complications of the patient with LVAD
5.	Neurological complications of the patient with ECMO



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

I.	Diagnosis and management of shock
J.	Nutrition
K.	Temperature management
L.	ICU prophylaxis
1.	Prevention of volutrauma
2.	DVT prevention
3.	Prevention of gastroduodenal ulcers
4.	Pressure ulcers
5.	CAUTI, VAP
6.	Early mobility
7.	Delirium
M.	General trauma
1.	Principles in the emergency evaluation of polytrauma
2.	Chest trauma
3.	Abdominal trauma
4.	Long bone fractures and fat embolism
5.	Burns
6.	Electrical injury
7.	Hanging/strangulation
N.	Pulmonary
1.	Pulmonary physiology
2.	Acute respiratory distress syndrome
3.	Acute pulmonary embolism
4.	COPD exacerbation
5.	Asthma exacerbation
6.	Pulmonary arterial hypertension
7.	Pneumonia (VAP, aspiration)
8.	Pulmonary edema (neurogenic, cardiogenic, mixed)
9.	Basics of bronchoscopy
O.	Cardiovascular
1.	Cardiovascular physiology
2.	Stress-induced cardiomyopathy
3.	Ischemic cardiomyopathy and acute coronary syndrome
4.	Valvulopathies
5.	Cardiac arrhythmias
6.	Indications for transient and permanent pacemaker



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

	7.	Acute aortic dissection
	8.	Basics of cardiac ultrasound
P.		Renal
	1.	Renal physiology
	2.	Acute kidney injury
	3.	Acid-base disorders
	4.	Electrolyte disorders
	5.	Renal replacement therapy
	6.	Pharmacological implications of altered renal clearance
Q.		Infectious diseases
	1.	Severe sepsis and septic shock
	2.	Infective endocarditis
	3.	Principles of antimicrobial use
	4.	Treatment of infection in the immunosuppressed
R.		Endocrine
	1.	Endocrine physiology
	2.	Pituitary apoplexy
	3.	Diabetes insipidus
	4.	Panhypopituitarism
	5.	SIADH
	6.	Cerebral salt wasting
	7.	Thyrotoxicosis and myxedema
	8.	Acute adrenal insufficiency
	9.	Acute dysglycemias
S.		Gastrointestinal disorders
	1.	Gastrointestinal physiology
	2.	Acute abdomen
	3.	Acute gastrointestinal hemorrhage (upper and lower)
	4.	Ileus (adynamic and obstructive)
	5.	Acute GI perforations
	6.	Acute mesenteric ischemia
	7.	Abdominal compartment syndrome
	8.	Fulminant liver failure (including management of brain edema)
	9.	Acute decompensation of cirrhosis
	10.	Pharmacological implications of altered hepatic clearance
T.		Hematological disorders



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

1.	Anemia and blood transfusion
2.	Thrombocytopenia and platelet transfusion
3.	Acute coagulopathies
4.	Disseminated intravascular coagulation
5.	Deep venous thrombosis
6.	Neurological complications of chemotherapy/immune therapy for hematological disorders
7.	Neurological complications of stem cell transplantation
8.	Neurological complications of CAR-T therapy
9.	Sickle cell crisis
10.	Thrombotic microangiopathies (TTP, HUS)
<b>02.</b>	<b>Diagnostic studies and procedural skills</b>
A.	Principles of neuroimaging (brain and spine)
1.	CT scan
2.	MRI scan
3.	Brain perfusion scans (CT/MR)
4.	Noninvasive angiography
5.	Conventional cerebral angiography
B.	Indications and interpretation of EEG, standard and processed EEG
C.	Indications and interpretation of ICP monitoring
D.	Indications and interpretation of transcranial Doppler
E.	Indications and interpretation of brain tissue oxygen monitoring
F.	Principles of multimodality monitoring
G.	Basic interpretation of EMG
H.	Basic interpretation of CSF analysis
I.	Brain death determination
J.	Vascular access
K.	Thoracic echo
L.	Lung ultrasound
<b>03.</b>	<b>Neurocritical care diseases</b>
A.	Coma and other states of altered consciousness
1.	Global anoxia-ischemia
a.	Post-resuscitation encephalopathy
2.	Toxic-metabolic
a.	Acute toxidromes
3.	ICU delirium



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

4.	Hypertensive encephalopathy
B.	Intracranial hypertension
C.	Acute ischemic stroke
1.	Malignant hemispheric infarction
2.	Basilar artery occlusion
3.	Acute stroke reperfusion therapy
D.	Intraparenchymal hemorrhage
1.	Intracerebral hematoma
2.	Cerebellar hematoma
3.	Intraventricular hemorrhage
E.	Subarachnoid hemorrhage
1.	Aneurysmal subarachnoid hemorrhage
2.	Non-aneurysmal subarachnoid hemorrhage
F.	Cerebral venous sinus thrombosis
G.	Spinal cord infarction
H.	Vascular anomalies
1.	Symptomatic unruptured intracranial aneurysm
2.	Cavernous malformation
3.	Arteriovenous malformation
4.	Cranial dural arteriovenous fistula
5.	Spinal dural arteriovenous fistula
I.	Traumatic brain injury
1.	Diffuse axonal injury
2.	Cerebral contusions
3.	Epidural hematoma
4.	Subdural hematoma
5.	Arterial dissection
6.	Carotid-cavernous fistula
7.	Penetrating injuries
J.	Spinal cord injury
1.	Central cord syndrome
2.	Neurogenic shock
K.	Unstable spine fractures
L.	Hydrocephalus
1.	Indications for temporary CSF diversion
2.	Indications for permanent CSF shunting



## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

M.	Acute central nervous system infections
1.	Viral encephalitis
2.	Bacterial meningitis
3.	Intracranial and spinal epidural abscess
4.	Ventriculitis
5.	Other
N.	Status epilepticus/seizures
O.	Acute neuromuscular disorders
1.	Guillain-Barré syndrome
2.	Myasthenic crisis
3.	Motor neuron disease
4.	Acute myopathies
5.	Rhabdomyolysis
6.	Critical illness neuromyopathy
P.	Fulminant demyelinating diseases
Q.	Autoimmune encephalitis
R.	Acute autonomic hyperactivity
S.	Neurooncology
1.	Primary brain tumors
2.	Brain metastasis
3.	Spinal cord tumors and metastasis
4.	Carcinomatous meningitis
5.	Paraneoplastic syndromes
6.	Complications of radiation therapy
7.	Complications of chemotherapy
T.	Special populations
1.	Pregnancy and post-partum
a.	Eclampsia, preeclampsia, HELLP, PRES, RCVS
2.	Post-organ transplant
U.	Pediatric patients
<b>04.</b>	<b>NEUROSURGICAL AND PERIOPERATIVE COMPLICATIONS</b>
A.	Seizures
B.	Pneumocephalus
C.	Hemorrhage
D.	Ischemia
E.	Infections





## American Board of Psychiatry and Neurology, Inc.

A Member Board of the American Board of Medical Specialties (ABMS)

F.	CSF leak
G.	Complications of EVD and lumbar drain
H.	Hyperperfusion
I.	Other
<b>05.</b>	<b>ETHICS, RESEARCH, AND PRACTICE-BASED LEARNING</b>
A.	Communication with families and conflict resolution
B.	Advance directives and DNR orders
C.	Uncertainties of prognostication and the self-fulfilling prophecy
D.	Palliative care and end-of-life care
E.	Withdrawal of invasive care and withholding
F.	Futility
G.	Determining decision makers
H.	Donation after cardiac death
I.	Care of the organ donor