American Board of Psychiatry and Neurology, Inc.

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

CERTIFICATION EXAMINATION IN NEUROLOGY

Beginning in 2017, the American Board of Psychiatry and Neurology, Inc. (ABPN) issued two-dimensional content specifications for the psychiatry, neurology and child neurology certification examinations. Questions for the September 2021 psychiatry, neurology and child neurology certification examinations will conform to these content specifications.

Within the two-dimensional format, one dimension is comprised of disorders and topics while the other is comprised of competencies and mechanisms that cut across the various disorders of the first dimension. By design, the two dimensions are interrelated and not independent of each other. All of the questions on the examination will fall into one of the disorders/topics and will be aligned with a competency/mechanism. For example, an item on substance use could focus on treatment, or it could focus on systems-based practice.

The psychiatry, neurology and child neurology content specifications can be accessed from the specialty certification section of our website.

Candidates should use the detailed content specifications as a guide to prepare for a certification examination. Scores for these examinations will be reported in a standardized format rather than the previous percent correct format.

Starting in 2018, all future examinations given by the ABPN will gradually conform to the two-dimensional content specification.

The American Board of Psychiatry and Neurology, Inc. 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 maintenance of certification processes.

For more information, please contact us at questions@abpn.com or visit our website at www.abpn.com.

CERTIFICATION EXAMINATION IN NEUROLOGY
2021 Content Blueprint

Number of questions: 400		
Dimension 1		
Neurologic Disorders and Topics		
01.	Headache and pain disorders	4-6%
02.	Epilepsy and episodic disorders	8-12%
03.	Sleep disorders	3-5%
04.	Genetic and developmental disorders	6-8%
05.	Vascular neurology	8-12%
06.	Neuromuscular diseases	9-13%
07.	Movement disorders	8-12%
08.	Demyelinating diseases	7-11%
09.	Neuroinfectious diseases	2-4%
10.	Brain and spinal trauma and spinal diseases	2-4%
11.	Neuro-ophthalmologic and neuro-otologic disorders	2-4%
12.	Metabolic diseases, nutritional deficiency states, and disorders due to toxins, drugs, and physical agents	3-5%
13.	Neuro-oncologic disorders	1-3%
14.	Behavioral neurology and neurocognitive disorders	7-9%
15.	Psychiatric disorders	5-7%
16.	Autonomic nervous system disorders	1-2%
17.	Questions not associated with a specific neurologic disorder	1-3%
18.	Neuroimmunologic and paraneoplastic CNS disorders	1-3%

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Number of questions: 400		
Dimension 2		
Physician Competencies and Mechanisms		
A.	Neuroscience and mechanism of disease	22-28%
B.	Clinical aspects of neurologic disease	17-23%
C.	Diagnostic procedures	17-23%
D.	Treatment/Management	22-28%
E.	Interpersonal and communication skills	2-3%
F.	Professionalism	2-3%
G.	Practice-based learning and improvement	2-3%
H.	Systems-based practice	2-3%

CERTIFICATION EXAMINATION IN NEUROLOGY
2021 Content Outline

Number of items: 400 (350 scored, 50 pretest)
Dimension 1
Neurologic Disorders and Topics
01. Headache and pain disorders
A. Headache
01. Primary headaches
a. Migraine
b. Tension-type headache
c. Cluster headache and other trigeminal autonomic cephalalgias
d. Other primary headaches (exertional headache, etc.)
02. Secondary headaches
a. Headache due to head and neck trauma (posttraumatic headache)
b. Headache due to cranial or cervical vascular disorder (thunderclap headache, reversible cerebral vasoconstriction syndrome (RCVS), arterial dissection, cerebral hemorrhage, ischemia)
c. Headache due to nonvascular intracranial disorder (hydrocephalus, idiopathic intracranial hypertension, low-CSF-pressure headaches, tumors)
d. Headache due to infection
e. Headache due to a substance or its withdrawal
f. Headache or facial pain due to disorder of cranium, neck, eyes, ears, nose, sinuses, and teeth
g. Headache due to psychiatric disorder
03. Cranial neuralgia, central and primary facial pain (trigeminal neuralgia, idiopathic facial pain, post-herpetic neuralgia)
B. Pain disorders
01. Central pain syndromes (thalamic, phantom, etc.)
02. Complex regional pain syndromes
02. Epilepsy and episodic disorders
A. Generalized seizures
01. Tonic-clonic
02. Absence
a. Typical
b. Atypical

c. Absence with special features
03. Myoclonic
04. Clonic
05. Tonic
06. Atonic
B. Focal seizures
01. Simple partial
02. Complex partial
03. Focal evolving to bilateral convulsive seizure
C. Electro-clinical syndromes
01. Neonatal period
a. Benign familial neonatal seizures (BFNS)
b. Early myoclonic encephalopathy (EME)
c. Ohtohara syndrome
02. Infancy
a. West syndrome
b. Myoclonic epilepsy in infancy
c. Benign infantile seizures
d. Benign familial infantile seizures
e. Dravet syndrome
f. Myoclonic encephalopathy in nonprogressive disorders
03. Childhood
a. Febrile seizures (FS+)
b. Early benign childhood occipital epilepsy (Panayiotopoulos type)
c. Epilepsy with myoclonic-atonic seizures
d. Benign epilepsy with centrotemporal spikes (BECTS)
e. Autosomal dominant nocturnal frontal lobe epilepsy (ADNFLE)
f. Late-onset childhood occipital epilepsy (Gastaut type)
g. Epilepsy with myoclonic absences
h. Lennox-Gastaut syndrome
i. Epileptic encephalopathy with continuous spike-and-wave during sleep (CSWS) including Landau-Kleffner syndrome
j. Childhood absence epilepsy
04. Adolescence through adult
a. Juvenile absence epilepsy (JAE)

b. Juvenile myoclonic epilepsy (JME)
c. Epilepsy with generalized tonic-clonic seizures alone
d. Progressive myoclonic epilepsies (PME)
e. Autosomal dominant partial epilepsy with auditory features (ADPEAF)
f. Other familial temporal lobe epilepsies
D. Less specific age relationship
01. Familial focal epilepsy with variable foci
02. Reflex epilepsies
E. Distinctive constellations
01. Mesial temporal lobe epilepsy with hippocampal sclerosis (MTLE with HS)
02. Rasmussen syndrome
03. Gelastic seizures with hypothalamic hamartoma
F. Epilepsies attributed to and organized by structural-metabolic causes
01. Structural, including tumors in vascular malformations
02. Infection
03. Trauma
04. Perinatal insults
05. Malformations of cortical development, including neurocutaneous syndromes
06. Mitochondrial and metabolic disorders
G. Epilepsies of unknown cause
H. Conditions with epileptic seizures traditionally not diagnosed as a form of epilepsy
01. Benign neonatal seizures (BNS)
02. Febrile seizures (FS)
I. Non-epileptic paroxysmal disorders
01. Breath-holding spells
02. Cardiac etiologies (e.g., prolonged QT interval)
03. Syncope, convulsive and nonconvulsive
04. Gastroesophageal reflux and Sandifer syndrome
05. Gratification phenomena and masturbation
06. Shuddering/shivering
07. Acute confusional migraine
08. Benign infant myoclonus
09. Psychogenic non-epileptic seizures
J. Status epilepticus
01. Convulsive
02. Non-convulsive

03. Sleep disorders
A. Insomnia
01. Psychological insomnia
02. Inadequate sleep hygiene
B. Sleep-disordered breathing
01. Obstructive sleep apnea
02. Central apnea syndromes
03. Sleep-related hypoventilation disorders
C. Central disorders of hypersomnolence
01. Narcolepsy (with and without cataplexy)
02. Kleine-Levin syndrome
03. Hypersomnia due to a medical condition
04. Insufficient sleep syndrome
D. Circadian rhythm sleep-wake disorders
01. Delayed sleep-wake phase disorder
02. Advanced sleep-wake phase disorder
03. Irregular sleep-wake rhythm disorder
04. Non-24-hour sleep-wake phase disorder
E. Parasomnias
01. NREM-related parasomnias
a. Arousal disorders, including sleepwalking, sleep terrors, and confusional arousals
i. Sleepwalking
ii. Sleep terrors
iii. Confusional arousals
b. Sleep-related eating disorder
02. REM-related parasomnias
a. REM sleep behavior disorder
b. Recurrent isolated sleep paralysis
c. Nightmare disorder
03. Other
a. Exploding head syndrome
b. Sleep-related hallucinations
c. Sleep enuresis
d. Parasomnia due to a general medical disorder
e. Medication/substance-related parasomnia

f. Unspecified parasomnia
F. Sleep-related movement disorders
01. Periodic limb movements of sleep
02. Sleep-related limb cramps
03. Sleep-related bruxism
04. Benign myoclonus of infancy
G. Sleep disorders in other conditions
01. Sleep disturbances in movement conditions
a. Parkinson disease
b. Multisystem atrophy
c. Dementia with Lewy bodies
d. Spinocerebellar degeneration
e. Huntington disease
02. Amyotrophic lateral sclerosis
03. Alzheimer disease
04. Effects of sleep disorders on cardiovascular/cerebrovascular risk factors
a. Hypertension
b. Atrial fibrillation
c. Congestive heart failure
d. Myocardial infarction
e. Stroke
04. Genetic and developmental disorders
A. Inherited metabolic disorders
01. Disorders of amino acid metabolism
a. Phenylketonuria
b. Nonketotic hyperglycemia
c. Other
02. Disorders of urea cycle metabolism
a. Ornithine transcarbamylase
b. Other
03. Disorders of sulfur amino acids
a. Homocystinuria
b. Other
04. Disorders of amino acid transport
a. Hartnup disease
b. Lowe syndrome

c. Other
05. Disorders of carbohydrate metabolism and transport
a. Galactosemia
b. Glucose transporter deficiency
c. Other
06. Organic acidurias
a. Methylmalonic acidurias
b. Glutaric acidurias
c. Other
07. Disorders of fatty acid oxidation
08. Disorders of purine metabolism
a. Lesch-Nyhan syndrome
b. Other
09. Porphyria
10. Other
B. Lysosomal disorders
01. Glycogen storage diseases
a. Pompe disease
b. Mucopolysaccharidoses
c. Other
02. Gangliosidoses
a. Tay-Sachs disease
b. Other
03. Gaucher disease
04. Fabry disease
05. Niemann-Pick disease
06. Neuronal ceroid and lipofuscinosis
07. Other
C. Leukodystrophies
01. Adrenoleukodystrophy
02. Pelizaeus-Merzbacher disease
03. Canavan disease
04. Alexander disease
05. Metachromatic leukodystrophy
06. Krabbe disease
07. Other

D. Additional disorders
01. Rett syndrome
02. Mitochondrial disorders
03. Peroxisomal disorders
04. Other
E. Chromosomal disorders
01. Autosomal abnormalities
a. Down syndrome (trisomy 21)
b. Trisomy 13
c. Cri du chat syndrome
d. Duplication/deletion
e. Williams syndrome
f. Other
02. X-chromosomal disorders
a. Fragile X syndrome
b. Other
03. Other
F. Disorders of brain and spine development
01. Anencephaly
02. Myelomeningocele and encephalocele
03. Chiari malformations
04. Other cord dysraphism
a. Syringomyelia
b. Diastematomyelia
05. Cerebellar malformations
06. Skull malformations, including craniosynostosis
a. Goubert syndrome
b. Dandy Walker and variants
c. Other
07. Brain malformations
a. Holoprosencephaly
b. Septo-optic dysplasia
c. Schizencephaly
d. Lissencephaly and other migrational abnormalities
e. Agenesis of the corpus callosum
f. Hemimegalencephaly

08. Microencephaly and micrencephaly
09. Macrencephaly, megalencephaly, and other overgrowth syndromes
10. Hydrocephalus
11. Cystic malformations (arachnoid, colloid, pineal, dermoid)
G. Neurocutaneous syndromes
01. Neurofibromatosis 1 and 2
02. Tuberous sclerosis
03. Sturge-Weber syndrome
04. Ataxia-telangiectasia
05. Von Hippel-Lindau disease
06. Incontinentia pigmenti
07. Other
H. Cerebral palsy
01. Spastic
02. Dyskinetic/dystonic
03. Ataxic
04. Other
05. Vascular neurology
A. Ischemic stroke (cerebral infarction and transient ischemic attack)
01. Atherosclerosis
a. Large-artery
b. Small-artery
02. Cardioembolic
03. Arterial dissection
04. Other vasculopathies, including hypercoagulability (thrombophilia) and vasculitis
05. Spinal cord infarction/ischemia
06. Other
B. Intracerebral hemorrhage
01. Chronic hypertension
02. Vascular malformations
03. Bleeding diatheses and antithrombotic agents
04. Amyloid angiopathy
05. Tumors
06. Pituitary apoplexy
07. Other

C. Subarachnoid hemorrhage
01. Aneurysm
02. Vascular malformations
03. Complications (including vasospasm)
D. Cerebral venous thrombosis
01. Pregnancy and puerperium
02. Hypercoagulability (thrombophilia)
E. Cerebrovascular constriction, including reversible cerebrovascular constriction syndrome and posterior reversible encephalopathy syndrome (PRES)
F. Sickle cell disease
G. Unruptured aneurysm and vascular malformation
H. CADASIL
I. Other
06. Neuromuscular diseases
A. Motor neuron disorders
01. Amyotrophic lateral sclerosis (sporadic)
02. Genetic
a. Familial amyotrophic lateral sclerosis
b. Spinal muscular atrophy
c. Kennedy disease
d. Tay-Sachs disease
03. Focal, including Hirayama disease
04. Paraneoplastic
B. Spinal root disorders
01. Cervical
02. Thoracic
03. Lumbosacral
04. Polyradiculopathy
05. Specific etiologies
a. Diabetes
b. Segmental herpes zoster and post-herpetic neuralgia
C. Plexopathies
01. Brachial
a. Traumatic (neonatal, penetrating injury)
b. Radiation-induced
c. Neuralgic amyotrophy (brachial neuritis)

d. Hereditary neuralgic amyotrophy
e. Neoplastic
02. Lumbosacral
a. Traumatic (hematoma, ischemic)
b. Radiation-induced
c. Diabetic radiculo-plexo-neuropathy
d. Neoplastic
D. Peripheral nerve disorders
01. Mononeuropathies
a. Median
b. Ulnar
c. Radial
d. Musculocutaneous
e. Axillary
f. Spinal accessory
g. Suprascapular
h. Sciatic
i. Peroneal (fibular)
j. Tibial
k. Femoral
l. Obturator
m. Facial
n. Trigeminal
o. Lateralfemoral cutaneous (meralgia paresthetica)
p. Other
02. Mononeuropathy multiplex
a. Diabetic
b. Vasculitic
03. Polyneuropathy
a. Hereditary
i. Demyelinating
(a) CMT1a
(b) CMTX
(c) Hereditary neuropathy with tendencies to pressure palsy (HNPP)
(d) Refsum disease
ii. Axon loss (CMT2)

iii. TTR amyloid polyneuropathy
b. Acquired
i. Demyelinating
(a) Acute inflammatory demyelinating polyneuropathy (AIDP)
(i) Guillain-Barré syndrome
(ii) Miller Fisher variant (GQ1b antibody)
(iii) Acute motor axonal neuropathy (AMAN)
(iv) Acute motor and sensory axonal neuropathy (AMSAN)
(b) Chronic inflammatory demyelinating polyneuropathy (CIDP)
(c) Multifocal mononeuropathy with conduction block
ii. Metabolic
(a) Diabetic
(b) Nutritional
(i) Vitamin B_6 deficiency
(ii) Vitamin B_{12} deficiency
(iii) Copper deficiency
(iv) Alcohol
(v) Hypervitaminosis B_6
iii. Toxic
(a) Arsenic, lead, thallium
(b) n-Hexane
(c) Organophosphates
(d) Drug-induced
(i) Isoniazide
(ii) Metronidazole
(iii) Nitrofurantoin
(iv) Chloroquine/hydroxychloroquine
(v) Lithium
(vi) Other
(e) Other
iv. Immune/inflammatory
(a) Paraneoplastic
(b) Amyloidosis
(c) Sarcoidosis
(d) Paraproteinemic
v. Small-fiber sensory polyneuropathy

c. Dorsal root ganglion disorders
i. Nutritional/toxic, including hypervitaminosis B_6
ii. Autoimmune/inflammatory
(a) Hu antibody syndrome
(b) Connective tissue disease (Sjogren syndrome)
iii. Friedreich ataxia
E. Neuromuscular junction transmission disorders
01. Myasthenia gravis
02. Lambert-Eaton myasthenic syndrome
03. Botulism
04. Congenital/hereditary myasthenia
F. Muscle disorders
01. Muscular dystrophies
a. Duchenne/Becker
b. Facioscapulohumeral
c. Limb-girdle
i. Calpain LGMD 2A
ii. Dysferlin LGMD 2B (including distal presentation)
iii. Sarcoglycan LGMD 2C-F
iv. FKRP LGMD 2I
d. Myotonic
i. Myotonic dystrophy 1 (including distal presentation)
ii. Myotonic dystrophy 2
e. Oculopharyngeal
f. Myofibrillar (including distal presentation)
g. Congenital muscular dystrophy
02. Congenital myopathies
a. Central core
b. Nemaline
c. Centronuclear/myotubular (including distal presentation)
03. Metabolic myopathies
a. Mitochondrial
i. Myoclonic epilepsy with ragged red fibers (MERRF)
ii. Mitochondrial myopathy, lactic acid, and stroke (MELAS)
iii. Kearns-Sayre syndrome
iv. Other

b. Glycogenoses
i. Pompe disease
ii. Myophosphorylase deficiency (McArdle disease)
c. Lipidoses
i. Carnitine deficiency
ii. Carnitine palmitoyltransferase 2 deficiency (CPT2)
d. Periodic paralyses
i. Hypokalemic
ii. Hyperkalemic
04. Acquired myopathies
a. Inflammatory myopathies
i. Polymyositis
ii. Dermatomyositis
iii. Inclusion body myositis
(a) Sporadic (including distal presentation)
(b) Hereditary (including distal presentation)
iv. Sarcoidosis
v. HIV
b. Critical illness myopathy
c. Toxic/drug-induced myopathy
i. HMG-CoA reductase
ii. Alcohol
iii. Chloroquine/hydroxychloroquine
iv. Corticosteroids
v. Colchicine
d. Metabolic/endocrine
i. Hypothyroid
ii. Hyperthyroid
iii. Hypokalemic
05. Rhabdomyolysis
G. Hyper-excitability disorders
01. Stiff-person syndromes
02. Potassium channelopathies (Isaac syndrome)
H. Autonomic dysfunction in neuromuscular diseases
01. Autoimmune autonomic neuropathy and ganglionopathy (including Sjogren syndrome)

02. Guillain Barre syndrome (autonomic manifestations)
03. Paraneoplastic autonomic neuropathies
04. Fabry disease
05. Autonomic neuropathies due to infectious disease
a. Chagas disease
b. Leprosy
c. Diphtheria
06. Diabetes (autonomic manifestations)
07. Amyloidosis
08. Adie syndrome
09. Small fiber polyneuropathy (autonomic manifestations)
10. Toxic neuropathies
a. Vacor
b. Hexane
c. Ciguatoxin
d. Vincristine
e. Cisplatin, paclitaxel
f. Heavy metals (arsenic, mercury, thallium)
g. Other
11. Other
07. Movement disorders
A. Parkinson disease and parkinsonism
01. Neurodegenerative
a. Idiopathic Parkinson disease (including diffuse Lewy body disease and dementia with Lewy body)
b. Multiple system atrophy
c. Progressive supranuclear palsy
d. Corticobasal degeneration
02. Post-traumatic parkinsonism
03. Vascular parkinsonism
04. Drug-induced parkinsonism
05. Hydrocephalus and normal-pressure hydrocephalus
06. Juvenile parkinsonism
B. Tremor
01. Essential tremor
02. Physiological tremor

03. Drug-induced tremor
C. Chorea
01. Huntington disease
02. Sydenham chorea
03. Drug-induced chorea
04. Chorea gravidarum
05. Neuroacanthocytosis
D. Ballism and athetosis
E. Dystonia
01. Focal dystonia
a. Genetic
b. Non-genetic
02. Generalized dystonia
a. Genetic
b. Non-genetic
03. Dopa-responsive dystonia
04. Other
F. Wilson disease
G. Neuroleptic-induced syndromes, acute and chronic
01. Acute dystonic reaction
02. Tardive syndromes
a. Tardive dyskinesia
b. Tardive dystonia
c. Tardive akathisia
H. Tic disorders
01. Tourette syndrome
02. Other
I. Myoclonus
01. Essential myoclonus
02. Post-hypoxic myoclonus
J. Other paroxysmal disorders
01. Hemifacial spasm
02. Dyskinesias
03. Restless legs syndrome
04. Automatisms
K. Ataxia

01. Spinocerebellar ataxias
02. Friedreich ataxia
03. Vitamin
04. Paroxysmal ataxia
L. Psychogenic movement disorders
01. Psychogenic tremor
02. Psychogenic dystonia
03. Psychogenic gait disturbance and ataxia
M. Critical care
01. Acute parkinsonism
02. Neuroleptic malignant syndrome
03. Serotonin syndrome
04. Dystonic storm
05. Ballism
06. Tic status
08. Demyelinating diseases
A. Multiple sclerosis and variants
B. Neuromyelitis optica
C. Acute disseminated encephalomyelitis and variants
D. Transverse myelitis
E. Other
09. Neuroinfectious diseases
A. Bacterial infections
01. Meningitis
a. Neonatal
i. E. coli
ii. Streptococcus
iii. Listeria
iiii. Other
b. Childhood
i. Hemophilus influenza
ii. Streptococcus pneumonia
iii. Other
c. Adolescent
i. Neisseria meningitis
ii. Other

d. Adult
i. Streptococcus pneumonia
ii. Listeria
iii. Other
02. Brain and spine abscess
B. Fungal infections
01. Meningitis
a. Cryptococcus
b. Histoplasmosis
c. Coccidiomycosis
d. Other
02. Cerebritis
a. Aspergillosis
b. Phycomycosis
c. Other
C. Mycobacteria, including tuberculosis
D. Viral infections
01. Meningitis
02. Encephalitis and myelitis
a. West Nile
b. Herpes simplex
c. Herpes zoster
d. Arbovirus
e. Rabies
f. HIV
g. Progressive multifocal leukoencephalopathy
h. Polio
i. Acute flaccid paralysis/Polio-like syndrome
i. Cytomegalovirus
j. Measles
k. Other
E. Protozoan infections
01. Toxoplasmosis
02. Naegleria
03. Trypanosomiasis
04. Other

F. Parasitic infections
01. Cysticercosis
02. Other
G. Prion infections
H. Non-infectious causes of meningitis
I. Systemic infections with neurologic effects
01. Lyme disease
02. Syphilis
03. Diphtheria
04. Tetanus
05. Whipple disease
06. Leprosy
07. Other
10. Brain and spinal trauma and spinal diseases
A. Brain trauma
01. Cerebral concussion, including chronic traumatic encephalopathy
02 Diffuse axonal injury
03. Cerebral contusion
04. Traumatic hemorrhage
a. Epidural hematoma
b. Subdural hematoma
c. Traumatic subarachnoid hemorrhage
B. Spinal trauma
01. Spinal cord contusion and transection
02. Spinal epidural hematoma
C. Non-traumatic spinal disorders
01. Spinal cord or cauda equina compression from disc or bone
02. Spinal cord herniation
03. Associated autonomic disorders
04. Other
D. Non-accidental trauma in children
11. Neuro-ophthalmologic and neuro-otologic disorders
A. Neuro-ophthalmology
01. Disorders of the optic nerve
a. Vascular (e.g., anterior ischemic optic neuropathy)
b. Inflammatory (e.g., optic neuritis)

c. Toxic and nutritional optic nerve disease
d. Inherited (e.g., Leber optic atrophy)
e. Papilledema and pseudopapilledema
f. Optic nerve tumor
02. Disorders of the retina
a. Retinal artery occlusion, including Susac syndrome
b. Retinal venous occlusion
c. Retinal degenerations
d. Phakomatoses
03. Other lesions of optic pathways
a. Optic chiasm
b. Optic tracts
c. Optic radiations
d. Visual cortex, including visual agnosias and cortical blindness
04. Disorders of the pupil
a. Horner syndrome
b. Argyll-Robertson pupil
c. Tonic pupil
05. Disorders of ocular motility
a. Disorders of supranuclear control of eye movements
i. Horizontal gaze paresis, including internuclear ophthalmoplegia (INO) and one-and-a-half syndrome
ii. Upgaze paresis, including Parinaud syndrome
iii. Downgaze paresis
b. Disorders of cranial nerves 3,4, 6, and their nuclei
c. Nystagmus
B. Neuro-otology
01. Vestibular disease
a. Benign positional vertigo
b. Ménière disease
c. Acute labyrinthitis
d. Toxic vestibulopathy
e. Cerebellopontine angle tumors
f. Central vertigo, including disembarkment syndrome
02. Deafness, including inherited and acquired

03. Other, including pulsatile tinnitus
12. Metabolic diseases, nutritional deficiency states, and disorders due to toxins, drugs, and physical agents
A. Metabolic diseases
01. Hypoxic-ischemic encephalopathy
02. Disorders of glucose metabolism, including hypoglycemia, diabetic ketoacidosis, and nonketotic hyperglycemia
03. Hepatic encephalopathy
04. Uremic encephalopathy, including dialysis dementia and dialysis dysequilibrium syndrome
05. Disorders of sodium, potassium, and water metabolism, including hyponatremia, hypernatremia, hypokalemia, and hyperkalemia
06. Disorders of calcium and magnesium metabolism, including hypocalcemia, hypercalcemia, hypomagnesemia, and hypermagnesemia
07. Endocrine diseases, including those of thyroid, parathyroid, adrenal, and pituitary glands (including pituitary apoplexy)
08. Drug overdose
B. Nutritional deficiency states
01. B vitamins
a. Thiamine (including Wernicke encephalopathy)
b. Niacin
c. Pyridoxine
d. Cobalamin
e. Folic acid
02. Vitamin E
03. Vitamins A and D
04. Other
a. Copper deficiency
b. Protein calorie malnutrition
c. Strachan syndrome and related disorders
d. Complications of bariatric surgery
C. Toxins, drugs, and physical agents
01. Exposure to chemicals
a. Acrylamide

b. Carbon disulfide
c. Ethylene oxide
d. Hexacarbon solvents
e. Organophosphates
f. Toluene
g. Other
02. Exposure to metals
a. Aluminum
b. Arsenic
c. Lead
d. Manganese
e. Mercury
f. Thallium
g. Tin
h. Other
03. Effects of drug abuse
a. Opioids
b. Cocaine
c. Amphetamines
d. Sedative-hypnotics
e. Inhalants
f. Hallucinogens
g. Other
04. Effects of alcohol
a. Acute alcoholic intoxication
b. Alcohol withdrawal syndromes
c. Effects related to nutritional deficiency
d. Effects of unknown etiology (e.g., Marchiafava-Bignami disease)
e. Effects of alcohols other than ethanol (e.g., methyl alcohol and ethylene glycol)
05. Effects of ionizing radiation
a. Encephalopathy
b. Myelopathy
c. Plexopathy
06. Hypothermia and hyperthermia
07. Electric current and lightning

08. Animal and insect neurotoxins
a. Snakes
b. Spiders
c. Scorpions
d. Tick paralysis
09. Marine neurotoxins
a. Ciguatera fish poisoning
b. Puffer fish poisoning
10. Plant neurotoxins
a. Mushroom poisoning
b. Other
D. Iatrogenic/therapeutic drugs
13. Neuro-oncologic disorders
A. Neoplasms
01. Primary
a. Primitive neuroectodermal tumors
i. Medullobastoma
ii. Retinoblastoma
b. Gliomas
i. Astrocytoma
(a) Low-grade
(i) Pilocytic astrocytoma
(ii) Astrocytoma
(b) High-grade
(i) Anaplastic astrocytoma
(ii) Glioblastoma
ii. Oligodendroglioma
(a) Oligodendroglioma
(b) Anaplastic oligodendroglioma
iii. Ependymoma
(a) Ependymoma
(b) Anaplastic ependymoma
(c) Myxopapillary ependymoma
c. Neuronal tumors
i. Central neurocytoma
ii. Dysembryoblastic neuroectodermal tumor (DNET)

iii. Gangliocytoma
iv. Ganglioglioma
d. Meningioma
e. Nerve sheath tumors
i. Schwannoma
ii. Neurofibroma
f. Primary CNS lymphoma
g. Craniopharyngioma
h. Pituitary adenoma
i. Pineal tumors
j. Choroid plexus tumors
02. Secondary
a. Metastatic intraparenchymal
b. Meningeal carcinomatosis
c. Metastases to spine and skull
B. Hereditary tumor syndromes
01. Neurofibromatosis
02. Von Hippel-Lindau disease
03. Tuberous sclerosis
04. Cowden syndrome
05. Multiple endocrine neoplasms (MEN)
C. Non-metastatic neurologic complications of systemic cancer
01. Vascular disease
D. Neurologic complications of cancer treatment
01. Radiation therapy
a. Radiation necrosis
b. Secondary neoplasms
02. Chemotherapy
14. Behavioral neurology and neurocognitive disorders
A. Delirium, dementia, and other cognitive disorders
01. Delirium
a. Delirium due to a medical condition
b. Substance intoxication delirium
c. Substance withdrawal delirium
d. Delirium due to multiple etiologies
e. Other

02. Dementia
a. Mild cognitive impairment
b. Alzheimer disease
c. Vascular dementia
d. HIV disease
e. Traumatic brain injury
f. Frontotemporal disorders
g. Dementia due to a medical condition
h. Substance/medication-induced dementia
i. Multiple etiologies, including metabolic, endocrine, toxic, and neoplastic/paraneoplastic
03. Amnestic disorders (including transient global amnesia)
04. Other
B. Neurodevelopmental disorders
01. Learning disorders
02. Communication disorders
03. Autism spectrum disorders
04. Attention-deficit and disruptive behavior disorders
05. Other (global developmental delay/intellectual disability)
C. Higher cortical function and clinical syndromes
01. Frontal lobe syndromes
02. Aphasia
03. Apraxia
04. Neglect
05. Agnosia
06. Disconnection syndromes
D. Alteration of mental status/encephalopathy/coma/brain death
E. Other
15. Psychiatric disorders
A. Schizophrenia and other psychotic disorders
01. Schizophrenia
02. Brief psychotic disorder
03. Psychotic disorder due to another medical condition
04. Substance/medication-induced psychotic disorder
05. Other

B. Depressive disorders
01. Depressive disorders
a. Major depressive disorder
b. Persistent depressive disorder (dysthymia)
c. Depressive disorder due to another medical condition
d. Other
C. Bipolar and related disorders
01. Bipolar I disorder
02. Bipolar II disorder
D. Anxiety disorders
01. Social anxiety
02. Panic disorder
03. Generalized anxiety disorder
04. Anxiety disorder due to another medical condition
05. Substance/medication-induced anxiety disorder
06. Other
E. Obsessive-compulsive and related disorders
F. Somatic symptom and related disorders
01. Conversion disorder/functional neurological symptom disorder (DSM-5)
02. Pain disorder
03. Somatic symptom disorder
04. Illness anxiety disorder
05. Factitious disorders
06. Other
G. Trauma- and stressor-related disorders
01. Post-traumatic stress disorder
02. Acute stress disorder
03. Adjustment disorder
H. Sexual disorders
01. Sexual pain disorders
02. Sexual dysfunction due to a general medical condition
03. Other
I. Feeding and eating disorders
01. Anorexia nervosa
02. Bulimia nervosa
J. Elimination disorders

K. Personality disorders
L. Other psychiatric disorders
16. Autonomic nervous system disorders
A. Disorders of orthostatic tolerance
01. Orthostatic hypotension
02. Postural tachycardia syndrome (POTS)
03. Neurally mediated syncope
a. Central causes (emotional)
b. Reflex causes
i. Carotid sinus stimulation
ii. Micturition, defecation, coughing
iii. Hemodynamic stress
B. Autonomic dysfunction in CNS disorders
01. Lewy body disorders
02. Multiple system atrophy
03. Tauopathies
04. Pure autonomic failure
05. Multiple sclerosis
06. Stroke
C. Disorders of sweating and thermoregulation
01. Hypothermia
02. Hyperthermia
03. Regional hyperhidrosis
04. Hypohidrosis (central and peripheral causes)
D. Autonomic disorders of the urogenital system
01. Multiple sclerosis
02. Multiple system atrophy
E. Autonomic disorders of the gastrointestinal tract
01. Achalasia
02. Gastroparesis
03. Cyclic vomiting syndrome
04. Intestinal pseudo-obstruction
05. Hirschprung disease
F. Visceral sensory disorders
01. Disorders of parasympathetic visceral sensation
a. Disorders of taste

b. Associated with glossopharyngeal neuralgia
02. Disorders of sympathetic visceral sensation: sympathetic storm in spinal cord transection
03. Disorders of central visceral sensation: insular cortex stroke
17. Questions not associated with a specific neurologic disorder
A. Normal anatomy, process, neurophysiology
B. Pharmacology
C. Medical-legal, public policy/regulatory factors, professional practice
D. Development through the life cycle: developmental processes, tasks, crises, transitions
01. Childhood (school entry, peer relations, individuation)
02. Adulthood (employment, parenting, acquisition/loss of specific capacities)
03. Late life (cognition, physical endurance, loss of specific capacities)
E. Medical, legal, public policy, and professional practice
18. Neuroimmunologic and paraneoplastic CNS disorders
A. CNS vasculitis and microangiopathies
01. Primary angiitis of the CNS
02. Secondary CNS vasculitis
a. Systemic vasculitides (giant cell arteritis, polyarteritis nodosa, microscopic polyangiitis, Behcet disese)
b. Systemic autoimmune disease (systemic lupus erythematosus, rheumatoid arthritis, Sjogren syndrome, sarcoidosis)
c. Infectious vasculitis (varicella zoster)
d. Substance-induced vasculitis (amphetamines, cocaine)
03. Microangiopathies (Susac syndrome, Sneddon syndrome)
B. Neuroimmunologic/paraneoplastic CNS syndromes
01. Cerebellar syndromes
02. Encephalitis/encephalomyelitis (anti-NMDA, anti-IL2, limbic, other)
03. Opsoclonus-myoclonus
04. Epilepsy
05. Other

Number of items: 400 (350 scored, 50 pretest)
Dimension 2
Physician Competencies and Mechanisms
A. Neuroscience and mechanism of disease
01. Neuroanatomy
a. Cerebral cortex
b. Connecting systems
c. Basal ganglia/thalamus
d. Brainstem
e. Cerebellum
f. Cranial nerves
g. Spinal cord
h. Spinal roots/peripheral nerves
i. Ventricular system, CSF
j. Vascular
k. Neuromuscular junction/muscle
l. Autonomic nervous system
m. Embryology and neural development
n. Pain pathways
o. Radiologic anatomy, cerebral blood vessels (angiography or MRA)
p. CSF anatomy, physiology, normal and abnormal patterns (cellular, chemical, enzymatic, serologic)
q. Other
02. Neuropathology
a. Basic patterns of reaction
b. Cerebrovascular disease
c. Trauma (cranial and spinal)
d. Metabolic/toxic/nutritional diseases
e. Infections
f. Demyelinating diseases/leukodystrophies
g. Neoplasms
h. Congenital/developmental anomalies
i. Degenerative/heredodegenerative disorders
j. Myopathies
k. Peripheral nerve

l. Neuromuscular junction disorders
m. Radiologic pathology pertinent to assigned pathology sections
n. Other
03. Neurochemistry
a. Carbohydrate metabolism
b. Lipid metabolism
c. Protein metabolism
d. Neurotransmitters
e. Axonal transport
f. Energy metabolism
g. Blood-brain barrier
h. Biochemistry of membranes/receptors/ion channels
i. Neuronal excitation
j. Vitamins (general aspects)
k. Inborn errors of metabolism
l. Electrolytes and minerals
m. Neurotoxins
n. Free radical scavengers
o. Excitotoxicity
p. Normal CSF constituents and volume
q. Other
04. Neurophysiology
a. Membrane physiology
b. Synaptic transmission
c. Sensory receptors and perception
d. Special senses
e. Reflexes
f. Segmental and suprasegmental control of movement
g. Cerebellar function
h. Reticular system: mechanisms of sleep and arousal, consciousness, circadian rhythms
i. Rhinencephalon, limbic system, visceral brain
j. Learning and memory
k. Cortical organization and function
l. Pathophysiology of epilepsy
m. Cerebral blood flow

n. Autonomic function
o. Blood-brain barrier
p. Neurophysiology of the visual system
q. Neurophysiology of hearing and vestibular function
r. Physiology of pain
s. Physiology of peripheral nerve and muscle
t. Other
05. Neuroimmunology/neuroinfectious disease
a. Pathogenesis of multiple sclerosis
b. Pathogenesis of diseases (including prion diseases)
c. Immunotherapy in multiple sclerosis, myasthenia gravis, and other neurologic disorders
d. Antibody mediated disorders
e. Other
06. Neurogenetics/molecular neurology, and neuroepidemiology
a. Mendelian-inherited diseases
b. Other modes of inheritance
c. Mitochondrial disorders
d. Nucleotide repeat disorders
e. Channelopathies
f. Genetics of epilepsy
g. Risk factors in neurologic disease
h. Demographics of neurologic disease
07. Neuroendocrinology
a. Thyroid gland
b. Cushing syndrome
c. Corticosteroids
d. Growth hormones
e. Hypothalamic function
f. Adrenal gland
g. Pituitary gland
h. Prolactin
i. Androgen
B. Clinical aspects of neurologic disease
01. Epidemiology
02. Risk factors

03. Signs and symptoms
04. Comorbidities
05. Course of illness
06. Prognosis
07. Localization
08. Pregnancy/peripartum
C. Diagnostic procedures
01. Neuroimaging
a. Structural imaging (computed tomography, magnetic resonance imaging)
b. Vascular imaging (conventional angiography, computed tomographic angiography, magnetic resonance angiography, ultrasound)
c. Functional neuroimaging, including fMRI, SPECT, PET
02. EEG (routine EEG, LTME, subdural and cortical EEGs)
03. Magnetoencephalography
04. Evoked potentials, including intraoperative monitoring
05. Sleep studies, including PSG and MSLT
06. EMG/NCS, including SFEMG
07. Autonomic function testing
08. CSF examination
09. Laboratory studies
10. Neuropsychological and cognitive testing
11. Cardiac testing
12. Tissue biopsy
13. Genetic testing
14. Other
D. Treatment/Management
01. General principles of neuropharmacology
a. Neuropharmacokinetics/neuropharmacodynamics
b. Drug toxicity/side effects/idiosyncratic reactions/medication withdrawal
c. Drug interactions
d. Teratogenicity
e. Age, gender, and ethnicity issues
f. Pharmacogenomics
g. Mechanisms of action
h. Drug side effects
02. Pharmacotherapy

a. Drugs for migraine and other headache syndromes
b. Analgesics (nonnarcotic, narcotic, etc.)
c. Anti-seizure medications
d. Drugs for sleep disorders
e. Drugs for cerebrovascular disease, including antiplatelet agents, anticoagulants, and thrombolytics
f. Drugs for neuromuscular disorders
g. Drugs for movement disorders
h. Drugs for multiple sclerosis (disease-modifying therapy and symptomatic treatment)
i. Drugs for psychiatric disorders (sedative-hypnotics, antianxiety agents, antidepressants, antipsychotics)
j. Vitamins/minerals/nutrients
k. Immunomodulatory agents, including oral medications, prednisone, IV Ig, and plasma exchange
l. Antimicrobial agents
m. Drugs used for increased intracranial pressure
n. Drugs for autonomic dysfunctions
o. Drugs for dementia
p. Other
03. Endovascular treatment
04. Neuromodulation
a. VNS
b. DBS
c. TENS
d. Spinal cord stimulation
e. TMS
f. ECT
05. Critical care
06. Surgical treatment
07. Radiation therapy
08. Rehabilitation
a. Exercise
b. Assistive devices
c. Assistive technologies
d. Braces

e. Physical therapy and occupational therapy
f. Pulmonary
g. Speech/swallowing
h. Nutrition management
09. Psychotherapy, biofeedback etc.
10. Reassurance, observation, no further diagnostic testing, etc.
11. Specific dietary treatment
12. Genetic counseling
13. Other
E. Interpersonal and communications skills
01. Communication with patients
02. Communication with patients' families
03. Communication with other professionals
04. Communication with the healthcare team
05. Communication with the public
06. Management of conflict
07. Common errors in communication
F. Professionalism
01. Professional behavior
02. Adherence to ethical principles (e.g., informed consent, research issues, clinical care, admission of errors)
03. Participation in the professional community
04. Sensitivity to diverse patient populations
05. End-of-life issues and brain death
06. Fatigue management
G. Practice-based learning and improvement
01. Development and execution of lifelong learning
a. Self-assessment and self-improvement
b. Use of evidence-based guidelines
c. Critical review of scientific literature
02. Formal practice-based quality improvement
H. Systems-based practice
01. Patient safety and the healthcare team
a. Medical errors and their prevention
b. Communication in patient safety

c. Regulatory and educational activities related to patient safety
02. Resource management
a. Parity
b. Access to care
c. Negotiation with payers
03. Community-based care
a. Community-based programs
b. Prevention
c. Recovery and rehabilitation
d. Knowledge of the legal aspects of neurological practice
04. Referral for appropriate consultation/decision making