An 85-year-old man is being evaluated for gait difficulties. He says that he frequently trips walking up stairs or on uneven surfaces. On examination, it is found that joint proprioception is absent in his toes. People with impaired position sense will usually fall if they simultaneously stand with their feet together and do which of the following?		
a		Flex the neck
b		Extend their arms in front of them
c		Flex the knees
d		Turn the head
e	*	Close their eyes
A 62-year-old right-handed man has "involuntary twitches" of his left hand. He first noticed between 6 months and 1 year ago that when he is at rest, his left hand shakes. He can stop the shaking by looking at his hand and concentrating. The shaking does not impair his activities in any way. He has no trouble holding a glass of water. There is no tremor in his right hand, and the lower extremities are not affected. He has had no trouble walking. There have been no behavioral or language changes. On examination, a left hand tremor is evident when he is distracted. Handwriting is mildly tremulous. He is very mildly bradykinetic on the left. The most likely examination finding would be which of the following?		
a		Upper motor neuron pattern of weakness on the left
b		Lower motor neuron pattern of weakness on the left
c		Bilateral upper motor neuron pattern of weakness
d	*	Mild cogwheel rigidity on the left only with distraction
e		Bilateral severe cogwheel rigidity
A 42-year-old man notices that his right pupil is smaller than the left. His wife has also commented that the right eye is "droopy looking." The only remarkable recent history is that he was tackled a little hard while playing football the day before. An axial T1-weighted magnetic resonance image (MRI) is shown below. Which of the following is present?		
a		Increased T2 signal in a periventricular distribution
b		Contrast enhancement along the tentorial margin
c	*	Increased T1 signal in the wall of the right carotid artery
d		Enlarged optic nerve in the orbit
e		Thrombosed cavernous sinus aneurysm
A 21-year-old, generally healthy college student presents with loss of sensation in the right arm that has been progressive over a few days. She says that she had flu for about a week and noticed the symptoms started afterward. It began in her hand, and then very slowly progressed over 36 hours to involve the entire right upper extremity. Her physician ordered blood tests and an MRI. A T2 image is pictured below. Which of the following is the most likely process?		
a		Ischemic
b	*	Demyelinating
c		Neoplastic
d		Hemorrhagic
e		Psychogenic
A 42-year-old attorney presents with a tremor in her hands that is most obvious when she is awake and trying to perform an action. She had first noticed it several years ago, but is concerned that it may be very slowly worsening. A tremor of this type is most likely caused by disease in which of the following structures?		
a		Thalamus
b	*	Cerebellum
c		Substantia nigra
d		Spinal cord
e		Internal capsule
A 65-year-old man was forced to retire from iron working because of a neurological condition which has progressed over the past several years. It is characterized by tremor, rigidity, and bradykinesia worse on the left side. The symptoms are somewhat alleviated by treatment with L-dopa/carbidopa. This patient's resting tremor is most likely to do which of the following upon falling asleep?		
a		It becomes more rapid

b		Its amplitude increases
c		It generalizes to limbs that were uninvolved when the patient was awake
d	*	It disappears
e		It transforms into choreiform movements
A 25-year-old woman with a history of epilepsy presents to the emergency room with impaired attention and unsteadiness of gait. Her phenytoin level is 37 (normal therapeutic range 10-20). She has white blood cells (WBCs) in her urine and has a mildly elevated thyroid-stimulating hormone (TSH) level. Examination of the eyes would be most likely to show which of the following?		
a		Weakness of abduction of the left eye
b	*	Lateral beating movements of the eyes
c		Impaired convergence
d		Papilledema
e		Impaired upward gaze
A 75-year-old retired journalist is generally healthy but has noticed worsening problems maneuvering over the past 4 months. He has particular trouble getting out of low seats and off toilets. He most likely has which of the following?		
a		Poor fine finger movements
b		Electromyography results indicating widespread denervation
c		Distal muscle weakness
d	*	Elevated creatine kinase
e		Gait apraxia
A 50-year-old right-handed man has presented to a neurologist because of gradually progressive hearing loss of the right ear. He denies worsening balance or ringing in his ears. There is no associated pain. A vibrating tuning fork is applied to the center of his forehead. The sound is louder in his left ear. This finding suggests which of the following?		
a		Bilateral sensorineural hearing loss
b		Bilateral conductive hearing loss
c		Right ear conductive hearing loss
d		Left ear sensorineural hearing loss
e	*	Right ear sensorineural hearing loss
A 38-year-old woman says that she is “dizzy.” A more careful history reveals that she has an abnormal sensation of movement intermittently. Examination reveals several beats of horizontal rhythmic eye movements on leftward gaze. A T1 MRI image from this patient is shown. Dix-Hallpike test is positive. Which is the most likely diagnosis?		
a		Ocular bobbing
b		Pontine hemorrhage
c		Cervicomedullary junction glioma
d	*	Benign positional vertigo
e		Brainstem stroke
A 48-year-old left-handed man develops increased sensitivity to sound in his left ear. A brain MRI reveals a posterior fossa mass. This symptom may develop in one ear with damage to which of the following ipsilateral CNs?		
a		V
b	*	VII
c		VIII
d		IX
e		X
A 42-year-old woman is being evaluated for gait difficulties. On examination, it is found that her ability to walk along a straight line touching the heel of one foot to the toe of the other is impaired. This finding is most common with which of the following?		
a	*	Cerebellar dysfunction
b		Parietal lobe damage
c		Temporal lobe damage

d		Ocular motor disturbances
e		Dysesthesias in the feet
A 55-year-old woman is being examined because of difficulty walking. The clinician notices the presence of fine twitching movements beneath the surface of the tongue and wasting of one side of the tongue. This finding suggests which of the following?		
a		Pseudobulbar affect
b		Aberrant reinnervation of muscles from CN X
c		Aberrant reinnervation of muscles from CN XII
d		Denervation of muscles from CN X
e	*	Denervation of muscles from CN XII
A 46-year-old longshoreman has lower back pain radiating down the posterior aspect of his left leg and paresthesias in the lateral aspect of his left foot. This has been present for 6 months. Strength and bowel and bladder function have been normal. Examination would be most likely to show which of the following?		
a		Left Babinski sign
b		Loss of pinprick sensation over the web space between the first and second digits of the left foot
c		Hyperreflexia at the left knee jerk
d	*	Hyporeflexia in the left Achilles tendon reflex
e		Decreased rectal tone
A 28-year-old graduate student presents with confusion and mild right hemiparesis developing over the course of an evening. His girlfriend relates that he has been having severe headaches each morning for the past 2 weeks. While being evaluated in the emergency room, he has a generalized tonic-clonic seizure. When examined 2 hours later, he is lethargic and unable to recall recent events, has difficulty naming, and has a right pronator drift. There is mild weakness of abduction of the eyes bilaterally. Funduscopic examination might be expected to show which of the following?		
a		Pigmentary degeneration of the retina
b		Hollenhorst plaques
c		Retinal venous pulsations
d	*	Blurring of the margins of the optic disc
e		Pallor of the optic disc
A 42-year-old man sustained multiple injuries in an automobile accident. After orthopedic surgery, he is difficult to arouse. Assuming that his brainstem function is intact, when he is lying supine with his head slightly elevated (30°) and one external auditory meatus is irrigated with warm water, which of the following would be expected?		
a		Tonic deviation of the eyes toward the ear that is stimulated
b	*	Nystagmus in both eyes toward the ear that is stimulated
c		Tonic deviation of the ipsilateral eye toward the ear that is stimulated
d		Nystagmus in both eyes away from the ear that is stimulated
e		Tonic deviation of both eyes away from the ear that is stimulated
A 33-year-old woman has an acute onset of right orbital pain after a tennis match. The following morning, her 10-year-old son comments that her right eye looks funny. On examination, she has a mild right ptosis and anisocoria. The right pupil is 2 mm smaller than the left, but both react normally to direct light stimulation. Visual acuity, visual fields, and eye movements are normal. The site of injury is caused by interruption of fibers from which of the following structures?		
a		Optic tract
b		Optic chiasm
c		CN III
d		T1 nerve root
e	*	Superior cervical ganglion
An 81-year-old woman with a history of type 2 diabetes mellitus and atrial fibrillation presents with right body weakness and slurred speech. She realized that there was a problem on awakening in the morning, and her husband called emergency medical services (EMS), who brought her to the emergency room. There are no word-finding difficulties, dysesthesia, or headaches. She is taking warfarin. Physical examination findings include blood pressure of 210/95 and irregularly irregular heartbeat. There is leftside neglect with slurred		

speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is Computed tomography (CT) of the head reveals a large right-sided subdural hematoma. The intracranial material appearing most dense on CT is which of the following?		
a	*	Blood clot
b		White matter
c		Gray matter
d		Cerebrospinal fluid (CSF)
e		Pia mater
A 15-year-old boy developed a left Bell palsy over the course of 1 week. He was treated with acyclovir and prednisone. Over the next 3 months he seemed to recover almost fully. However, he has noticed involuntary twitching at the left corner of the mouth each time he tries to blink the left eye. This is most likely caused by which of the following?		
a		A habit spasm
b		Cerebellar damage producing impaired coordination
c	*	Aberrant regeneration of the facial nerve
d		Trigeminal neuralgia
e		Focal seizures
You are working in the emergency room when a 30-year-old man presents with a headache that started yesterday. As he was shoveling snow, he felt a sudden pain in the front of his head. The pain does not throb and has been relatively constant since. He says that now his neck also has become a little stiff. He carries a diagnosis of migraine headaches, but says that this is different than his usual headaches. He is afebrile and has a normal examination except for slight photophobia and mild discomfort with neck flexion. Which of the following is the most appropriate next step in management?		
a		Obtain a brain MRI
b	*	Obtain a brain CT
c		Obtain a cerebral angiogram
d		Obtain an electroencephalogram (EEG)
e		Obtain a psychiatric consult
A 56-year-old right-handed woman presents to the emergency room with a sudden-onset, severe, left-sided headache. The pain began when she stood up from her couch while watching TV. A head CT is normal. Which of the following is the most appropriate next step in management of this patient?		
a		Begin intravenous heparin
b	*	Perform a lumbar puncture
c		Obtain a brain MRI
d		Obtain a cerebral angiogram
e		Give the patient a prescription for zolmitriptan and send her home
A 60-year-old man is clinically suspected to have had a subarachnoid hemorrhage. A lumbar puncture shows 7000 red blood cells (RBCs) in tube 1 and 7200 in tube There are nine WBCs in each. The fluid is xanthochromic. The opening pressure is 22 cm H_2O. Which of the following is the next best step in managing this case?		
a	*	Arrange for a cerebral angiogram and call a neurosurgical consult
b		Give the patient a prescription for sumatriptan and send him home
c		Immediately give 2 g of intravenous ceftriaxone
d		Immediately start intravenous acyclovir
e		Repeat the lumbar puncture
A 28-year-old man presents to the emergency room with a severe headache. It is different than any that he has ever had before. It is in the right posterior region and is not throbbing. The headache started suddenly, about 5 hours ago, while he was watching television and eating pizza. He is now noticing some mild neck stiffness and blurry vision. Examination is significant for weakness of abduction of the right eye. Which of the following is the most definitive test for identifying intracranial aneurysms?		
a		MRI scanning
b		CT scanning

c		Single photon emission computed tomography (SPECT)
d		Positron emission tomography (PET)
e	*	Cerebral angiography
In this MRI scan, the site most likely to produce a noncommunicating hydrocephalus when it is obstructed is identified by which of the following?		
a	*	Arrow A
b		Arrow B
c		Arrow C
d		Arrow D
e		Arrow E
An 18-year-old woman tells her physician that she has throbbing right-sided headaches. They are most common just prior to her menstruation and are associated with nausea and photophobia. Examination at the time of the office visit is normal. A T1 sagittal image from her MRI is shown below. The location of the cerebellar tonsil in the MRI scan suggests which of the following?		
a		Arnold-Chiari type 1 malformation
b		Arnold-Chiari type 2 malformation
c		Giant cisterna magna
d		Dandy-Walker syndrome
e	*	Normal posterior fossa
A 46-year-old woman with depression has a brain CT performed at the request of her psychiatrist. There is the incidental finding of a dense mass that appears to originate from the tentorium cerebelli. The tentorium cerebelli separates the superior cerebellum from the cerebrum and is a common site of origin for which of the following?		
a	*	Meningiomas
b		Ependymomas
c		Hemangioblastomas
d		Medulloblastomas
e		Astrocytomas
A 35-year-old woman has noticed that over the past 3-to-5 months she has had some difficulties with balance, particularly when she closes her eyes. On examination, she has decreased hearing in her left ear and also left body dysdiadochokinesia. Her physician orders a head CT, shown below. Given this CT scan, which was obtained without contrast enhancement, the physician must assume that the posterior fossa mass at the arrow is which of the following?		
a		Normal
b	*	Calcified
c		Highly vascular
d		Granulomatous
e		Highly cystic
A 35-year-old woman presents with slowly evolving left arm ataxia, left-sided head tilt, dysarthria, and left facial weakness. The patient denies vertigo, tinnitus, or hearing loss. MRI reveals a posterior fossa mass that lies close to the bone and enhances with contrast. Which of the following is the most likely explanation for this lesion?		
a		Cerebellar infarction
b		Cerebellar hemorrhage
c	*	Meningioma
d		Schwannoma
e		Astrocytoma
A 45-year-old woman presents with worsening right-sided headaches. Examination is significant for a left-sided drift. Brain MRI and CT scans reveal a homogeneously enhancing, round, dural-based, calcified lesion compressing the right frontal lobe. Which of the following is the most appropriate course of action for the management of this case?		
a		Anticoagulation
b		Triple therapy with isoniazid, rifampin, and ethambutol
c	*	Surgical resection

d		Chemotherapy
e		Craniospinal axis irradiation
A patient with bilateral posterior fossa masses has café au lait spots and reports a family history of bilateral hearing loss at a relatively young age. A gene abnormality should be suspected on which chromosome?		
a		5
b		13
c		17
d		21
e	*	22
A 65-year-old diabetic man has a history of a cerebellar stroke. The stroke occurred 5 years ago, and he says that he has now fully recovered. He cannot recall the symptoms, but his medical records state that he presented with left-sided dysdiadochokinesia. Which of the following was most likely impaired?		
a		Successive finger movements
b		Heel-to-toe walking
c	*	Rapid alternating movements
d		Tremor suppression
e		Conjugate eye movements
A 27-year-old healthy normal woman is having a routine EEG examination. The study begins with a 5-minute recording of her sleeping. Then she is awakened and given photic stimulation. Next she is alert and awake, lying with her eyes closed in a quiet room. At this point she will exhibit what frequency of EEG activity over the occipital and parietal areas bilaterally?		
a		0-to-3 Hz
b		4-to-7 Hz
c	*	8-to-13 Hz
d		14-to-25 Hz
e		26-to-45 Hz
A 38-year-old right-handed woman presented with early morning headaches. There was papilledema on examination. Below is shown a T1-weighted postcontrast brain MRI of the patient. Which of the following symptoms is most likely to also be present?		
a	*	Aphasia
b		Neglect
c		Left hemiparesis
d		Left homonymous hemianopia
e		Alexia without agraphia
A 65-year-old man with a history of atrial fibrillation is brought into the emergency room at 1:00 PM because of the acute onset of right-sided weakness and inability to speak beginning at noon. On examination, he is alert but unable to speak. He follows simple one-step commands. There is left gaze deviation and impaired rightward gaze. Flaccid paresis of the right face and arm is present, but he is able to lift his right leg off the bed. Reflexes are decreased on the right side. What diagnostic examination is needed?		
a		MRI of the brain
b		Serum creatine phosphokinase (CPK)
c		Cerebral angiography
d		Myelography of the spinal canal
e	*	Cranial computerized axial tomography (head CT)
A 50-year-old homeless woman is admitted to the hospital with ulcerations on her feet. She complains of burning in her feet and lower legs, but does not localize the pain to where her skin is ulcerated. She is unable to stand with her eyes closed and her feet together. Her deep tendon reflexes are diffusely hypoactive. On systematic testing of her strength and sensation, decreased pain, position, and vibration sense are evident in her hands and feet. She also has weakness on dorsiflexion of the ankles and wrists. What diagnostic examination is needed?		
a		MRI of the brain
b		Brain biopsy
c	*	Nerve conduction studies (NCS)

d		CSF analysis
e		EEG
A 7-year-old boy has recurrent staring episodes while at school. His school performance is poor. The episodes never last more than 30 seconds, and afterward he immediately resumes normal attention. There are no lip-smacking movements or other automatisms. He never falls down during the episodes. If he is walking or eating during the episode, he merely stops. He is unaware of this behavior. What diagnostic examination is needed?		
a		MRI of the brain
b		Brain biopsy
c		Nerve conduction studies (NCS)
d		CSF analysis
e	*	EEG
A previously healthy 7-month-old infant is brought to the emergency room after having had three generalized convulsions. The infant has a stiff neck, is poorly responsive to the examiner, and has a rectal temperature of 9°C (102°F). The parents report that 1 day of diarrhea preceded this episode. What diagnostic examination is needed?		
a		MRI of the brain
b		Brain biopsy
c		Nerve conduction studies (NCS)
d	*	CSF analysis
e		EEG
A 70-year-old right-handed woman with a history of polio describes 1 month of increasing difficulty rising from a chair and walking. She also has trouble combing her hair and cooking, and there is mild swallowing trouble, but only with solids. Her legs and upper arms are painful and mildly swollen. Periungual telangiectasias are seen. Erythrocyte sedimentation rate (ESR) is What diagnostic examination is needed?		
a	*	Serum creatine phosphokinase (CPK)
b		Cerebral angiography
c		Myelography of the spinal canal
d		Cranial computerized axial tomography (head CT)
e		Skull x-ray
A 26-year-old woman with a 7-year history of epilepsy develops a generalized convulsion while shopping. She is taken to an emergency room, but no one accompanying her is aware of a previous history of epilepsy. Because she has a protracted postictal period, numerous investigations are performed over the course of the next hour. CT scan is completely normal, but her arterial blood gases reveal a mild acidosis. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
d		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
e	*	Protein Content - 45 (mg/dL; Normal values – 15-45); Glucose Content – 78 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 130 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values -

		Clear); IgG % Total of Protein – 7 (Normal values – 3-12)
A 72-year-old man is brought to the emergency room in a coma. He has a fever and was observed to have a generalized tonic-clonic seizure just prior to arriving in the emergency room. His family reports that he had lethargy and cough about 1 week prior to the acute deterioration. On the day of his seizure, he developed a headache and blurred vision. He had some vomiting early in the day and became more stuporous as the day progressed. There is no evidence of alcohol or drug use. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c		Protein Content - 65 (mg/dL; Normal values – 15-45); Glucose Content – 80 (mg/dL; Normal values – 40-70); WBC – 8 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 110 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 17 (Normal values – 3-12)
d	*	Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
e		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
A 19-year-old man notices discomfort in his ankles within a few days of recovering from an upper respiratory infection. Over the next 7 days, he develops progressive weakness in both of his legs and subsequently in his arms. He has no loss of sensation in his limbs, despite the progressive loss of strength. He does not lose bladder or bowel control, but on the tenth day of his weakness he develops problems with breathing and requires ventilatory assistance. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b	*	Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c		Protein Content - 65 (mg/dL; Normal values – 15-45); Glucose Content – 80 (mg/dL; Normal values – 40-70); WBC – 8 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 110 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 17 (Normal values – 3-12)
d		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
e		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
A 40-year-old man was involved in an automobile accident. There is an obvious laceration on his head, and he has neck pain. Police at the scene report that he was unconscious when they arrived, but the patient cannot recall this loss of consciousness. In fact, he cannot remember the accident or events within 10 minutes prior to		

the accident. On examination, he has obvious neck stiffness and photophobia. Within a few hours of his arrival at the emergency room, he develops vomiting. Lumbar puncture is delayed until after an MRI can be obtained. The tap is performed 2 days after the accident because the patient is still confused and irritable. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
c		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
d		Protein Content - 45 (mg/dL; Normal values – 15-45); Glucose Content – 78 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 130 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 7 (Normal values – 3-12)
e	*	Protein Content - 250 (mg/dL; Normal values – 15-45); Glucose Content – 68 (mg/dL; Normal values – 40-70); WBC – 20 (per mL; Normal values – 0-5); RBC – 9808 (per mL; Normal values - 0); Opening Pressure – 190 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 14 (Normal values – 3-12)
A 22-year-old woman is brought to the hospital in a coma. She has had changes in her behavior characterized by excessive suspiciousness and facetiousness over the month prior to her hospitalization. One week prior to her hospitalization, she had visual and auditory hallucinations. Drug testing reveals no apparent illicit drug use. On the day of admission, she had a generalized seizure and lapsed into a coma. MRI shows unilateral changes in the temporal lobe. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c		Protein Content - 65 (mg/dL; Normal values – 15-45); Glucose Content – 80 (mg/dL; Normal values – 40-70); WBC – 8 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 110 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 17 (Normal values – 3-12)
d		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
e	*	Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
A 26-year-old man develops bed wetting and transient sexual dysfunction that resolves over the course of 6 weeks. One month later, he notices a pins-and-needles sensation in his right leg that never clears completely. On examination, he has hyperreflexia in both of his legs and past-pointing in his right arm. His gait is slightly ataxic, and he is unable to perform tandem gait. Choose the CSF pattern most likely to be found.		
a		Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values –

		40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c	*	Protein Content - 65 (mg/dL; Normal values – 15-45); Glucose Content – 80 (mg/dL; Normal values – 40-70); WBC – 8 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 110 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 17 (Normal values – 3-12)
d		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
e		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
A 26-year-old woman weighing in excess of 300 lb has headache and blurred vision that began 2 weeks prior to consulting a physician. She has no vomiting or diplopia. Examination of her eyes reveals florid papilledema but without hemorrhages. Her neurologic examination is otherwise entirely normal. She had a similar problem while pregnant with her fourth child. Choose the CSF pattern most likely to be found.		
a	*	Protein Content - 40 (mg/dL; Normal values – 15-45); Glucose Content – 75 (mg/dL; Normal values – 40-70); WBC – 3 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 430 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 8 (Normal values – 3-12)
b		Protein Content - 300 (mg/dL; Normal values – 15-45); Glucose Content – 86 (mg/dL; Normal values – 40-70); WBC – 7 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 120 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Yellow (Normal values - Clear); IgG % Total of Protein – 12 (Normal values – 3-12)
c		Protein Content - 65 (mg/dL; Normal values – 15-45); Glucose Content – 80 (mg/dL; Normal values – 40-70); WBC – 8 (per mL; Normal values – 0-5); RBC – 0 (per mL; Normal values - 0); Opening Pressure – 110 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Clear (Normal values - Clear); IgG % Total of Protein – 17 (Normal values – 3-12)
d		Protein Content - 95 (mg/dL; Normal values – 15-45); Glucose Content – 12 (mg/dL; Normal values – 40-70); WBC – 150 (per mL; Normal values – 0-5); RBC – 3 (per mL; Normal values - 0); Opening Pressure – 200 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Milky (Normal values - Clear); IgG % Total of Protein – 13 (Normal values – 3-12)
e		Protein Content - 120 (mg/dL; Normal values – 15-45); Glucose Content – 65 (mg/dL; Normal values – 40-70); WBC – 85 (per mL; Normal values – 0-5); RBC – 15 (per mL; Normal values - 0); Opening Pressure – 300 (per mL; mm H_2O; Normal values – 100-180); Appear-ance – Cloudy (Normal values - Clear); IgG % Total of Protein – 15 (Normal values – 3-12)
A 67-year-old woman with a history of type 2 diabetes mellitus and atrial fibrillation presents to the emergency room with left body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 hour ago, and she was brought immediately to the emergency room. She denies word-finding difficulties, dysesthesia, and headache. She is taking warfarin. Physical examination findings include blood pressure of 205/90 mm Hg and irregularly irregular heartbeat. There is left-side neglect with slurred speech. There is a corticospinal pattern of weakness of the left body, with the face and upper extremity being worse than the lower extremity. Routine chemistries and cell counts are normal. Her international normalized ratio (INR) is Which of the following is the most appropriate first step in management?		
a		Administer tissue plasminogen activator
b		Call a vascular surgery consult for possible endarterectomy
c	*	Order a brain computed tomography (CT)

d		Order a cerebral angiogram
e		Start heparin
A 74-year-old man is diagnosed with an acute stroke. A right middle cerebral artery occlusion is demonstrated by magnetic resonance angio-gram shown below. Which of the following is the most likely cause of this patient's present condition?		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation
A 52-year-old woman with diabetes awakens with right body weakness. Examination at the hospital indicates relatively symmetric upper motor neuron pattern of weakness involving the face, arm, and leg. There are no sensory abnormalities. Language is preserved. A stroke associated with this presentation is most likely with damage to which of the following?		
a	*	Internal capsule
b		Cerebellum
c		Putamen
d		Caudate
e		Amygdala
Following cardiac catheterization, a 60-year-old right-handed man acutely develops a loss of sensation involving the entire left side of his body (face, arm, and leg). Which of the following structures has most likely been damaged?		
a		Internal capsule
b	*	Thalamus
c		Hippocampus
d		Globus pallidus
e		Pons
A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a		Basilar artery tip aneurysm
b		Right lateral medullary infarction
c	*	Left lateral medullary infarction
d		Left medial medullary infarction
e		Right medial medullary infarction
A 50-year-old man had a brainstem stroke following a vertebral artery dissection secondary to an acute sports-related injury. This patient might be expected to develop dysphagia secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of cranial nerve (CN) V
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
Occlusion of which of the following arteries typically produces Wallenberg (lateral medullary) syndrome?		
a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Anterior spinal artery

A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. CT scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo (susceptibility) sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. Which of the following is the most likely cause of this patient's symptoms and signs?		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension
A 22-year-old male abuser of intravenous heroin has been having severe headaches during sexual intercourse. Within a few minutes of one headache, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a 3-to-4 cm lesion in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. Which of the following diagnostic studies is most likely to establish the basis for this patient's neurologic deficits?		
a		Human immunodeficiency virus (HIV) antibody testing
b	*	Cerebrospinal fluid (CSF) examination
c		Electroencephalography (EEG)
d		Nerve conduction studies (NCS)
e		Cardiac catheterization
A 52-year-old right-handed woman who has abused intravenous drugs for many years has an HIV antigen test that is positive. CD4+ T-lymphocyte count is normal. A brain CT scan reveals several hemorrhagic lesions. NCS reveal generalized slowing in the legs, and EEG exhibits focal slowing over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and the patient's CSF is xanthochromic. Which of the following is the probable site of injury in the central nervous system (CNS)?		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
A 35-year-old man presented to the emergency room with the acute onset of right body weakness. A diffusion-weighted MRI was positive and is in part shown below. Further imaging sequences indicated a small left frontal intraparenchymal hemorrhage. Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it almost completely resolved. On the sixth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 minutes, but he had residual right-sided weakness for 24 hours. A head CT scan was unchanged from admission. The most appropriate treatment to institute involves which of the following?		
a		Heparin
b		Recombinant tissue plasminogen activator (r-TPA)
c		Lamotrigine
d	*	Levetiracetam
e		Warfarin
A 27-year-old woman presents to the emergency room following a generalized tonic-clonic seizure that began focally in her left lower extremity. Although the seizure stopped within 1 minute, there was persistent weakness of the left lower extremity lasting several hours. Further testing revealed a small arteriovenous malformation near the motor cortex. Focal weakness lasting for 24 hours following a motor seizure is most likely attributable to which of the following?		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd paralysis

e		Hyponatremia
A 16-year-old girl with complex partial seizures and mild mental retardation has a birthmark consisting of deep red discoloration extending over her forehead and left upper eyelid. A CT scan of her brain would be likely to reveal which of the following?		
a		A hemangioblastoma
b		A Charcot-Bouchard aneurysm
c		An arteriovenous malformation
d	*	A leptomeningeal angioma
e		A fusiform aneurysm
A 72-year-old retired school teacher has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of which of the following arteries?		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery
c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Left posterior inferior cerebellar artery (PICA)
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting and also mentions a dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. This radiologic study is expected to reveal that the woman has which of the following?		
a		An arteriovenous malformation
b		An occipital astrocytoma
c		A sphenoidal meningioma
d		A pituitary adenoma
e	*	A saccular aneurysm
A 43-year-old man presents with a left CN III deficit and headache. The ocular symptoms began with papillary dilation and then progressed to oculomotor impairment. Which of the following is the most likely site of the lesion responsible for this presentation?		
a		Anterior communicating artery
b	*	Posterior communicating artery
c		Anterior cerebral artery
d		Brainstem white matter
e		Posterior cerebral artery
Three days after a subarachnoid hemorrhage, a patient begins to develop neck stiffness and photophobia. This is followed by left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood. Which of the following is the most appropriate treatment?		
a		Heparin
b		Warfarin
c	*	Nimodipine
d		Phenytoin
e		Carbamazepine
A 73-year-old man with a history of hypertension has a 10-minute episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the past month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following is the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor

c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
A 72-year-old woman with coronary artery disease and a history of cardiac artery stenting began developing episodes of transient visual loss several months ago. Each episode is restricted to her left eye and comes on suddenly. She says, "All of a sudden half of my vision is black." Each time the vision returns within 30 minutes. There have been approximately 10 of these events within the past 3 months. These symptoms are most likely related to which of the following?		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
A thorough evaluation reveals that a 69-year-old patient has a symptomatic 90% stenosis of the right internal carotid artery at the bifurcation. Which of the following management options is most likely to prevent a future stroke?		
a		Warfarin
b		Carotid artery angioplasty
c	*	Carotid endarterectomy
d		Extracranial-intracranial bypass
e		Aspirin
A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b		Wernicke aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e	*	Global aphasia
A 45-year-old woman with chronic atrial fibrillation discontinues warfarin treatment and abruptly develops problems with language comprehension. She is able to produce some intelligible phrases and produces sound quite fluently; however, she is unable to follow simple instructions or to repeat simple phrases. On attempting to write, she becomes very frustrated and agitated. Emergency MRI reveals a lesion of the left temporal lobe that extends into the superior temporal gyrus. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b	*	Wernicke aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e		Anomic aphasia
A 71-year-old man develops headache and slight difficulty speaking while having sexual intercourse. He has a long-standing history of hypertension, but has been on medication for more than 7 years. He makes frequent errors in finding words and follows complex commands somewhat inconsistently. The most obvious defect in his language function is his inability to repeat the simplest of phrases without making repeated errors. An emergency CT scan reveals an intracerebral hemorrhage in the left parietal lobe that appears to communicate with the lateral ventricle. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b		Wernicke aphasia
c		Anomic aphasia
d		Global aphasia
e	*	Conduction aphasia

A 24-year-old woman abruptly loses all speech during the third trimester of an otherwise uncomplicated pregnancy. She has a history of severe migraines during which she occasionally develops a transient right hemiplegia. Her comprehension is good, and she is frustrated by her inability to speak or write. She is unable to repeat simple phrases, but she does begin to produce simple words within 5 days of the acute disturbance of language. Pick the language disturbance that best explains the clinical picture.		
a	*	Broca aphasia
b		Wernicke aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e		Anomic aphasia
A 78-year-old man has a cardiac arrest while being treated in an emergency room for chest pain. Resuscitation is initiated immediately, but profound hypotension is observed for at least 20 minutes. A cardiac rhythm is restored, but the patient remains unconscious for the next 3 days. When he is awake, alert, and extubated, his speech is limited to repetition of words and sounds produced by those around him. He has no apparent comprehension of language and produces few sounds spontaneously. Whenever the patient is spoken to, he fairly accurately repeats what was said to him. Pick the language disturbance that best explains the clinical picture.		
a		Transcortical motor aphasia
b		Anomic aphasia
c		Global aphasia
d		Conduction aphasia
e	*	Mixed transcortical aphasia
A 62-year-old man has had a left hemisphere stroke. He has impaired naming and repetition. His speech is nonfluent. Comprehension is preserved. Pick the language disturbance that best explains the clinical picture.		
a	*	Broca aphasia
b		Wernicke aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e		Anomic aphasia
An 82-year-old man has had a slow, stepwise cognitive deterioration. A brain MRI is consistent with the diagnosis of dementia caused by multiple cerebral infarcts. Naming is impaired. Comprehension, repetition, and fluency are relatively maintained. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b		Wernicke aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e	*	Anomic aphasia
A 53-year-old woman sustains a small left frontal embolic stroke during cardiac catheterization. She has poor naming ability and is nonfluent. Comprehension and repetition are relatively preserved. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b		Wernicke aphasia
c		Transcortical sensory aphasia
d	*	Transcortical motor aphasia
e		Anomic aphasia
A 28-year-old woman is hit in the left neck while playing lacrosse. Approximately 2 hours later she begins having language difficulties. Her speech is fluent and nonsensical. She cannot understand commands, but repeats well. Pick the language disturbance that best explains the clinical picture.		
a		Broca aphasia
b		Wernicke aphasia
c	*	Transcortical sensory aphasia
d		Transcortical motor aphasia
e		Anomic aphasia

A 9-year-old boy is brought to your clinic by his parents because he has begun to have episodes of eye fluttering lasting several seconds. Sometimes he loses track of his thoughts in the middle of a sentence. There was one fall off a bicycle that may have been related to one of these events. There are no other associated symptoms, and the episodes may occur up to 20 or more times per day. The boy's development and health have been normal up until this point. He had two head injuries as a young child: the first when he fell off a tricycle onto the ground, and the second when he fell off a playset onto his head. Both episodes resulted in a brief loss of consciousness and he did not think clearly for part of the day afterward, but he had no medical intervention. Which of the following test results is most likely?		
a		Electroencephalogram (EEG) showing 1-2 Hz spike wave
b		Brain magnetic resonance imaging (MRI) showing widespread abnormalities
c	*	EEG showing 2-3 Hz spike wave
d		Lumbar puncture with high white blood cell (WBC) count
e		Conners Rating Scale abnormalities reported by parents, but not teachers
A 19-year-old right-handed man who carries the diagnosis of epilepsy is seen in the urgent-care clinic. He had been healthy until about age 12, when he began to have episodes of eye fluttering lasting several seconds. Sometimes he would lose track of his thoughts in the middle of a sentence. There was one fall off of a bicycle that may have been related to one of these events. He has been treated with valproic acid. At one point he was off all medications, but the seizures returned. He is now at the end of his first semester of college and came in today because he had a witnessed generalized tonic-clonic seizure this morning. He had had only about 2 hours of sleep the night before because he was studying for a final examination. Which of the following is the most appropriate thing to tell this patient?		
a		"I know that you faked this seizure to avoid taking a test"
b	*	"Lack of sleep may have contributed to triggering this seizure"
c		"You can expect to have tonic-clonic seizures on a regular basis from now on"
d		"Your seizures are getting worse and there is nothing we can do about it"
e		"You should take the next semester off to recover and get extensive testing"
A 56-year-old man with epilepsy is brought into the emergency room. He has been having continuous generalized tonic-clonic seizures for the past 30 minutes. He is treated with 2 mg of intravenous lorazepam. Most physicians recommend using a high dose of intravenous benzodiazepine as part of the management of status epilepticus because it has which of the following qualities?		
a		Ability to suppress seizure activity for more than 24 hours after one injection
b		Lack of respiratory depressant action
c	*	Rapid onset of action after intravenous administration
d		Lack of hypotensive effects
e		Lack of dependence on hepatic function for its metabolism and clearance
A 34-year-old woman is having her medications tapered in the epilepsy-monitoring unit. She has a convulsive seizure that does not stop after 5 minutes, even after she receives a lorazepam injection. A second intravenous drug is given. Infusing which of the following antiepileptic drugs at more than 50 mg/minute in an adult may evoke a cardiac arrhythmia?		
a		Carbamazepine
b		Diazepam
c		Phenobarbital
d		Clonazepam
e	*	Phenytoin
A 44-year-old man presents with left arm shaking. Two days ago, the patient noticed left arm paresthesias along the lateral aspect of his left arm and left fourth and fifth fingers while he was reading. He thinks he may have been leaning on his left arm at the time; the symptoms resolved after 30 seconds. This morning, he noted the same feelings, lasting a few seconds, but then his fourth and fifth fingers started shaking rhythmically, and the shaking then spread to all of his fingers, his hand, and then his arm up to his elbow. This episode lasted a total of 30 seconds. He denies any strange smells or tastes, visual changes, or weakness. Afterward, his fingers felt locked in position for a few seconds. Then he felt as if he did not have control of his hand and had difficulty donning his socks. He and his wife decided to drive to the emergency room, and in the car he had trouble putting his seat belt latch into its socket. Examination and routine labs are normal. Which of the following is the		

most appropriate next action?		
a		Discharge the patient to follow up in clinic in 2 weeks
b	*	Obtain a brain MRI
c		Obtain an EEG
d		Obtain an orthopedic consult
e		Order electromyography (EMG) and nerve conduction studies (NCS)
A 31-year-old right-handed woman has a history of alcohol abuse requiring detox. Currently, she says she is drinking about nine beers 3 days per week. She drank five glasses of wine and three beers 5 days ago. Last night, she had 10 beers. This morning, she awoke feeling well. She was speaking with her fiancé, went to the bathroom, and got back into bed. She had no headache, fever, chills, nausea, vomiting, or pain. Suddenly her body became stiff with arms flexed for a few seconds, followed by rhythmic jerking of both arms. Her legs were shaking, but less so. Her eyes were open, and she was foaming at the mouth. After 1 minute, this stopped, and she initially did not recognize her fiancé or his sister. She slowly returned to a normal level of consciousness over a 10-minute period. She remembers events just prior to the episode, and she remembers being in the car on the way to the hospital. Her only medication is a multivitamin. She denies illicit drugs. Her examination is entirely normal. Routine labs and a brain MRI are normal. Following cessation of drinking, what is the peak time period for alcohol withdrawal seizures?		
a	*	1-to-2 days
b		2-to-3 days
c		3-to-4 days
d		4-to-5 days
e		5-to-6 days
A 4-year-old boy has the onset of episodes of loss of body tone, with associated falls, as well as generalized tonic-clonic seizures. His cognitive function has been deteriorating. EEG shows 1-to-2 Hz spike-and-wave discharges. Which of the following is the most likely diagnosis?		
a		Landau-Kleffner syndrome
b	*	Lennox-Gastaut syndrome
c		Juvenile myoclonic epilepsy
d		Mitochondrial encephalomyopathy
e		Febrile seizures
A 27-year-old man begins to experience infrequent episodes of nausea, warmth rising through his body, and an unusual odor like rotting fish. His girlfriend notices that afterward he may develop twitching of the right side of his face and an inability to speak for several minutes. Afterward the man appears dazed and cannot remember what has occurred. He has otherwise been well. MRI of his brain is most likely to show a lesion in which of the following areas?		
a		Left occipital lobe
b		Right frontal lobe
c		Cribriform plate
d	*	Hippocampus
e		Left parietal lobe
An 18-year-old girl riding on the back of her boyfriend’s motorcycle without a helmet is brought in with a left frontal skull fracture and cortical contusion. Her Glasgow Coma Scale (GCS) is She is admitted to the intensive care unit. She has had no seizures. Which of the following is true regarding anticonvulsant therapy in this case?		
a		It is contraindicated owing to risk of rash
b		It is best achieved using phenobarbital
c		It is likely to cause increased cerebral edema
d		It is indicated to reduce the incidence of late posttraumatic epilepsy
e	*	It is indicated to reduce the incidence of early posttraumatic seizures
A 36-year-old man with intractable complex partial seizures and mesial temporal sclerosis (MTS) undergoes left temporal lobectomy. He is most likely to develop which of the following problems after surgery?		
a	*	Right superior quadrantanopsia
b		Right inferior quadrantanopsia
c		Right homonymous hemianopsia

d		Right hand weakness
e		Aphasia
A 29-year-old man with a history of febrile seizures as a child has developed medication-refractory complex partial seizures within the past 2 years. An MRI reveals the abnormality indicated by the arrow. Which of the following is true regarding this condition?		
a	*	This patient may benefit from a neurosurgical procedure
b		The patient will probably die within 2 years
c		The seizures will most likely stop with further medication titration
d		A head computed tomography (CT) should be performed
e		A cerebral angiogram may confirm the diagnosis
A 37-year-old man develops involuntary twitching movements in his left thumb. Within 30 seconds, he notices that the twitching has spread to his entire left hand and that involuntary movements have developed in his left forearm and the left side of his face. He cannot recall what happened subsequently, but his wife reports that he fell down and the entire left side of his body appeared to be twitching. He appeared to be unresponsive for about 3 minutes and confused for another 15 minutes. During the episode, he bit his tongue and wet his pants. Choose the seizure type that best explains the patient's complaints.		
a		Generalized tonic-clonic
b		Generalized absence
c		Complex partial
d		Epilepsia partialis continua
e	*	Jacksonian march
A 17-year-old boy reports involuntary jerking movements in his arms when he awakens. This has occurred during the day after a nap as well as in the morning after a full night's sleep. Over the next few months, he developed similar jerks during the day, even when he had been awake for several hours. He did not lose consciousness with these muscle jerks, but did occasionally fall. On one occasion, jerks in his legs caused a fall that resulted in a fractured wrist. Choose the seizure type that best explains the patient's complaints.		
a		Jacksonian march
b		Psychomotor status
c		Tonic-clonic status epilepticus
d		Pseudoseizures
e	*	Myoclonic
A 21-year-old man reports several episodes over the previous 4 years during which he lost consciousness. He had no warning of the impending episodes, and with each episode he injured himself. Observers told him that he abruptly developed a blank stare and stopped talking. His body became stiff and he arched his back. After several seconds of this type of posturing, his arms and legs started shaking violently. During one of these episodes, he dislocated his right shoulder. He routinely bit his tongue and urinated in his pants during the episodes. Choose the seizure type that best explains the patient's complaints.		
a	*	Generalized tonic-clonic
b		Generalized absence
c		Complex partial
d		Epilepsia partialis continua
e		Simple partial sensory
A 25-year-old woman was fired from her job after she misplaced papers vital for the company. She had had recurrent episodes for several years during which she performed nonsensical activities such as burying her plates in the backyard, hiding her underwear, and discarding her checkbook. She did not recall what she had done after performing these peculiar activities. She had been referred for psychotherapy, but the episodes became even more frequent after she was started on thioridazine. Her husband observed one episode and noted that she was unresponsive for about 5 minutes and confused for at least 1 hour. She did not fall down or remain immobile during the episodes. As the episodes became more frequent, she noticed that she would develop an unpleasant taste in her mouth, reminiscent of motor oil, just before an episode. Choose the seizure type that best explains the patient's complaints.		
a		Generalized tonic-clonic
b		Generalized absence

c	*	Complex partial
d		Epilepsia partialis continua
e		Simple partial sensory
A 21-year-old cocaine-abusing man develops seizures that persist for more than 30 minutes before emergency medical attention is available. When examined nearly 1 hour later, he is still exhibiting tonic-clonic movements and has never recovered consciousness. Choose the seizure type that best explains the patient's complaints.		
a		Generalized tonic-clonic
b		Generalized absence
c		Jacksonian march
d		Psychomotor status
e	*	Tonic-clonic status epilepticus
A 16-year-old boy with a history of acute viral myocarditis requires placement of a left ventricular assist device. He has a complicated postoperative course, with fever, bacteremia, and renal failure. On postoperative day 10, he develops continuous rhythmic jerking of the left corner of the mouth, associated with jerking of the left thumb. This persists for 24 hours. He is alert, able to follow commands, and has no gaze deviation. CT shows a small hemorrhagic infarction of the right posterior frontal region. Choose the seizure type that best explains the patient's complaints.		
a		Generalized tonic-clonic
b		Generalized absence
c		Complex partial
d	*	Epilepsia partialis continua
e		Simple partial sensory
A 19-year-old woman describes recurrent memory problems. Her fiancé reports that she seems to be inattentive for minutes at a time several times a week. She never injures herself during these episodes, but she cannot recall what happened, and, on one occasion, she became lost while walking home. An ambulatory EEG demonstrates evolving spike activity originating in the left temporal lobe during one of the episodes. The EEG pattern does not generalize. CT and MRI scanning of the brain reveal no structural abnormalities. Conversations with the woman's parents reveal that she had febrile seizures when she was 3 years old, which abated with antipyretic treatment alone. Choose the medication that is most appropriate in the management of the patient's problem.		
a		Lorazepam
b		Magnesium sulfate
c		Clonazepam
d		Felbamate
e	*	Levetiracetam
A 7-month-old boy develops generalized limb extension and neck flexion spasms that occur more than 20 times daily and are associated with altered consciousness. EEG reveals diffuse, high-voltage, polyspike-and-slow-wave discharges between spasms and suppression of these bursts during the spasms. A sibling died with a brainstem glioma, and the father has several large areas of hypopigmented skin in the shape of ash leaves. The infant had obvious psychomotor retardation even before the appearance of the spasms. Choose the medication that is most appropriate in the management of the patient's problem.		
a		Phenobarbital
b		Levetiracetam
c		Divalproex sodium
d		Primidone
e	*	Adrenocorticotropic hormone (ACTH)
A 5-year-old girl has frequent staring spells and does not respond when her mother calls her name during these episodes. She never falls down or bites her tongue, but she does have occasional lip smacking during episodes. EEG reveals a 3 Hz spike-and-wave pattern that occurs for less than 10 seconds at a time but several times an hour. The child has normal motor and cognitive development. Choose the medication that is most appropriate in the management of the patient's problem.		
a		Lorazepam
b		Felbamate
c		Phenobarbital

d		Levetiracetam
e	*	Divalproex sodium
A 35-year-old pregnant woman at term is admitted to the hospital for delivery. She has headaches and visual blurring. Her blood pressure is 180/On examination, she is edematous. Reflexes are increased. Protein is found in the urine. She then develops a generalized tonic-clonic convulsion. Choose the medication that is most appropriate in the management of the patient's problem.		
a		Lorazepam
b	*	Magnesium sulfate
c		Clonazepam
d		Felbamate
e		Phenobarbital
A 22-year-old woman reports a scotoma progressing across her left visual field over the course of 30 minutes, followed by left hemicranial throbbing pain, nausea, and photophobia. Her brother and mother have similar headaches. Which of the following is present in this patient's condition but not in common migraine?		
a		Photophobia
b		Familial pattern
c	*	Visual aura
d		Hemicranial pain
e		Nausea
A 16-year-old woman has been having attacks of weakness, blurry vision, and loss of consciousness. The symptoms progress over 20-to-30 minutes, then begin to recede and are followed by a throbbing occipital headache. This patient's symptoms are most likely due to which of the following?		
a		Complex partial seizure
b		Common migraine
c	*	Basilar migraine
d		Transient ischemic attack
e		Orthostatic hypotension
A 43-year-old woman describes lancinating pains radiating into the right side of her jaw. This discomfort has been present for more than 3 years and has started occurring more than once a week. The pain is paroxysmal and routinely triggered by cold stimuli, such as ice cream and cold drinks. She has sought relief with multiple dental procedures and has already had two teeth extracted. Multiple neuroimaging studies reveal no structural lesions in her head. Assuming there are no contraindications to the treatment, a reasonable next step would be to prescribe which of the following?		
a		Clonazepam, 1 mg orally three times daily
b		Diazepam, 5 mg orally two times daily
c		Divalproex sodium, 250 mg orally three times daily
d		Indomethacin, 10 mg orally three times daily
e	*	Carbamazepine, 100 mg orally three times daily
A 23-year-old woman has had 1 week of worsening facial pain. She describes it as an intense shooting pain that comes and goes. It is present only on her right face. Which of the following is most likely to be this patient's underlying problem?		
a	*	Multiple sclerosis
b		Tolosa-Hunt syndrome
c		Migraine
d		Anterior communicating artery aneurysm
e		Falx meningioma
A 39-year-old left-handed woman is being treated with carbamazepine for lancinating pain in her left face. The pain is paroxysmal, usually occurring without apparent reason, but seems sometimes to be brought on by a cold breeze. Both trigeminal neuralgia and atypical facial pain involve pain that may be which of the following?		
a		Lancinating
b		Paroxysmal
c		Associated with anesthetic patches
d		Abolished with resection of the gasserian ganglion

e	*	Unilateral
A 26-year-old graduate student presents to the emergency room with a severe left-sided throbbing headache associated with nausea, vomiting, and photophobia. She has tried taking ibuprofen without relief. On further questioning, she relates that she has been having similar headaches three to four times per month for the past year. Her mother had a similar problem. Her examination is normal. Immediate therapy for this patient's present headache might include which of the following drugs?		
a	*	Sumatriptan
b		Nitroglycerine
c		Verapamil
d		Amitriptyline hydrochloride
e		Phenobarbital
A 16-year-old girl has been diagnosed with migraine headaches. She has identified some triggers and made lifestyle changes, but still has 14 headaches per month. Appropriate long-term management might include a prescription for daily use of which of the following medications?		
a		Metoclopramide hydrochloride
b		Sumatriptan
c		Oral contraceptives (OCPs)
d	*	Amitriptyline hydrochloride
e		Ergotamine tartrate
A 32-year-old woman is being evaluated for headaches. They started about 6 months ago and occur a few times per week, lasting until she falls asleep. The pain is constant and focused at the front and back of the head. The pain is unrelated to position and tends to be worse later in the day. There is mild photophobia. Which of the following findings is most likely?		
a	*	Slightly reduced neck range of motion and paracervical tenderness
b		Papilledema
c		Abnormal brain magnetic resonance imaging (MRI)
d		Abnormal brain computed tomography (CT)
e		Abnormal electroencephalogram (EEG)
A 22-year-old dance instructor routinely develops headaches on the weekend. The headaches are almost always limited to the right side of her head and centered about the right temple. She knows that a headache is coming because of changes in her vision that precede the headache by 20-to-30 minutes. She sees scintillating lights just to the left of her center of vision. This visual aberration then expands and interferes with her vision. The blind spot that it creates appears to have a scintillating margin. As the blind spot clears, the headache starts. It rarely lasts more than 1 hour, but is usually accompanied by nausea and vomiting. Pick the diagnosis that best explains the clinical picture.		
a	*	Classic migraine
b		Cluster headache
c		Common migraine
d		Trigeminal neuralgia
e		Sinusitis
A 29-year-old woman comes to the emergency room with facial pain of new onset. She has stabbing pains on the left side of her face just below her eye. These last less than 1 second at a time, but are so severe that she winces involuntarily with each pain. The pain seems to be triggered by drinking cold fluids. The only other problems she has noticed are clumsiness in her right hand and blurred vision in her right eye. Both of these have been present for more than 2 years and have not interfered with her normal activities. Pick the diagnosis that best explains the clinical picture.		
a		Classic migraine
b		Cluster headache
c		Common migraine
d	*	Trigeminal neuralgia
e		Sinusitis
A 35-year-old man has severe throbbing pain waking him from sleep at night and persisting into the day. This pain is usually centered about his left eye and appears on a nearly daily basis for several weeks or months each		

year. It occurs most prominently at night within a few hours of falling asleep and is associated with a striking personality change in which the man becomes combative and agitated. He never vomits or develops focal weakness. Pick the diagnosis that best explains the clinical picture.		
a		Classic migraine
b	*	Cluster headache
c		Common migraine
d		Trigeminal neuralgia
e		Sinusitis
A 76-year-old man develops a dull left-sided head pain with some radiation of the discomfort to the right side of the head. He has no nausea or vomiting with the pain, but has lost 10 lb over the previous 2 months. His erythrocyte sedimentation rate is 102 mm/h, and he is mildly anemic. An extensive investigation for malignancy reveals no signs of lymphoma, carcinoma, or leukemia. Pick the diagnosis that best explains the clinical picture.		
a		Classic migraine
b		Cluster headache
c		Common migraine
d		Trigeminal neuralgia
e	*	Temporal arteritis
An 81-year-old man with chronic lymphocytic leukemia develops pain and burning over the right side of his face. Within a few days, a vesiculopapular rash in the distribution of the first division of the trigeminal nerve appears. The vesicles become encrusted, and the burning associated with the rash abates. Within 1 month the rash has largely resolved, but the man is left with a dull ache over the area of the rash that is periodically punctuated by shooting pains. Imipramine 100 mg nightly helps reduce the intensity of the chronic pain. Pick the diagnosis that best explains the clinical picture.		
a		Sinusitis
b		Temporal arteritis
c		Vertebrobasilar migraine
d		Hemiplegic migraine
e	*	Postherpetic neuralgia
An obese 37-year-old woman has had a daily headache, worse in the morning, for 1 year. She has episodes of transient visual obscurations affecting each eye and also hears a pulsatile tinnitus. Examination is notable for bilateral papilledema. MRI is normal. Select the most likely diagnosis.		
a		Carotid artery dissection
b	*	Pseudotumor cerebri
c		Glioblastoma multiforme
d		Thunderclap headache
e		Analgesic rebound headache
A 42-year-old man presents with a sudden and severe headache associated with nausea. The headache reaches maximal intensity within 5 seconds. He has no prior history of headache. Examination is unremarkable. CT and spinal fluid examination show no evidence of blood. He later admits that he had been engaged in sexual activity when the headache occurred. Select the most likely diagnosis.		
a		Carotid artery dissection
b		Pseudotumor cerebri
c		Glioblastoma multiforme
d	*	Thunderclap headache
e		Analgesic rebound headache
A 29-year-old man relates that he has had recent headaches only when standing up. The headaches resolve quickly when he lies down and are accompanied by mild nausea. His examination is normal. Select the most likely diagnosis.		
a		Carotid artery dissection
b		Analgesic rebound headache
c		Paroxysmal hemicrania
d		Raeder syndrome

e	*	Intracranial hypotension
A 35-year-old woman works as a keyboard operator and must type for 6 hours per day. Over the course of a few months she has developed pain in her wrists (right worse than left), as well as some paresthesias into the lateral palmar aspect of her hands. There is no atrophy. Conservative treatment for her condition consists of which of the following?		
a		Exploratory surgery
b	*	Wrist splints
c		Hydrocodone
d		Shoulder sling
e		Back brace
A 28-year-old police officer has been generally healthy except for mild, easily controlled hypertension. He sustains a gunshot wound to the upper arm. This type of trauma may cause partial damage to the median nerve that may leave the patient with which of the following?		
a	*	Easily provoked pain in the hand
b		Weakness on wrist extension
c		Atrophy in the first dorsal interosseous muscle
d		Numbness over the fifth digit
e		Radial deviation of the hand
A 19-year-old man is involved in a street fight in which he is viciously attacked with a lead pipe. A particularly forceful blow hits his left elbow. Blunt trauma to the elbow may lead to the development of which of the following?		
a		Wristdrop
b		Weakness of the abductor pollicis brevis
c	*	Clawhand or benediction sign (impaired extension of digits 4 and 5)
d		Ulnar deviation of the hand
e		Poor pronation of the forearm
A 21-year-old right-handed woman works at an airport as a luggage handler. She is usually on the tarmac working in an environment in which loud noises are routine. Ear protection must be worn to protect against loss of hearing and the development of which of the following?		
a		Vertigo
b	*	Tinnitus
c		Ataxia
d		Diplopia
e		Oscillopsia
A young man fractures his humerus in an automobile accident. As the pain from the injury subsides, he notices weakness on attempted flexion at the elbow. He develops paresthesias over the radial and volar aspects of the forearm. During the accident, he probably injured which one of the following nerves?		
a		Suprascapular nerve
b		Long thoracic nerve
c	*	Musculocutaneous nerve
d		Radial nerve
e		Median nerve
A 37-year-old alcoholic man awakes with clumsiness of his right hand. Neurologic examination reveals poor extension of the hand at the wrist. He most likely has injured which one of the following nerves?		
a		Median nerve
b		Brachioradialis nerve
c		Musculocutaneous nerve
d	*	Radial nerve
e		Ulnar nerve
A 72-year-old man slipped and fell in the bathroom 1 week ago. He hit the right side of his head, but did not think it was necessary to seek medical attention. He finally goes to his doctor because his son thinks his balance is off. Computed tomography (CT) of the brain may fail to reveal a small subdural hematoma in this patient for which of the following reasons?		

a	*	The lesion is subacute
b		The hematoma extends into the brain from the subdural space
c		The resolution of the CT machine is greater than 2 mm
d		The subdural hematoma is less than 4 hours old
e		The patient has extensive cerebral atrophy
A 16-year-old boy is struck on the side of the head by a bottle thrown by a friend involved in a prank. He appears dazed for about 30 seconds, but is lucid for several minutes before he abruptly becomes stuporous. His limbs on the side opposite the site of the blow are more flaccid than those on the same side as the injury. On arrival in the emergency room 25 minutes after the accident, he is unresponsive to painful stimuli. His pulse is 40 beats per minute, with an electrocardiography (ECG) revealing no arrhythmias. His blood pressure in both arms is 170/110 mm Hg. Although papilledema is not evident in his fundi, he has venous distention and absent pulsations of the retinal vasculature. Which of the following is the best explanation for this young man's evolving clinical signs?		
a		A seizure disorder
b		A cardiac conduction defect
c	*	Increased intracranial pressure
d		Sick sinus syndrome
e		Communicating hydrocephalus
A 52-year-old patient presents with headache and sudden onset of mania. Her head CT is shown below. Two hours later her blood pressure is 225/110 mm Hg, her heart rate is 40 beats per minute, and her consciousness is fluctuating. Which of the following is the best management over the next 4 hours for this patient?		
a	*	Craniotomy
b		Antihypertensive medication
c		Transvenous pacemaker placement
d		Ventriculoperitoneal shunt
e		Antiepileptic medication
A 64-year-old woman slips and falls on an icy sidewalk. She hits the side of her head on the curb. After a momentary loss of consciousness she recovers, but is in some pain. Fifteen minutes later her level of consciousness begins to fluctuate and she is brought to the emergency room comatose. Magnetic resonance imaging (MRI) of the patient's head within the first few hours of injury will most likely reveal which of the following?		
a		A normal brain
b		Intracerebral hematoma
c		Temporal lobe contusion
d		Subarachnoid hemorrhage
e	*	Epidural hematoma
CT scanning of a patient's head within 2 hours of a newly acquired epidural hematoma should reveal which of the following?		
a		A normal brain
b	*	A lens-shaped density over the frontal lobe
c		Increased cerebrospinal fluid (CSF) density with a fluid-fluid level
d		Multifocal attenuation of cortical tissue
e		Bilateral sickle-shaped densities over the hemispheres
An elderly patient suffers from a relatively mild head trauma but then subsequently develops a progressive dementia over the course of several weeks. He is most likely to have sustained which of the following?		
a		An acute subdural hematoma
b		An acute epidural hematoma
c	*	A chronic subdural hematoma
d		An intracerebral hematoma
e		An intracerebellar hematoma
A 42-year-old woman is involved in a head-on collision with a lamp-post at 50 mph. Her head hits the windshield. She is highly likely to have an intracranial hemorrhage in which one of the following structures?		
a		Occipital lobe

b		Thalamus
c		Putamen
d		Parietal lobe
e	*	Temporal lobe
A 57-year-old woman is involved in a motor vehicle accident in which she strikes the windshield and is briefly unconscious. She makes a full recovery, except that 3 months later she notices that she cannot taste the food she is eating. This is most likely caused by which of the following?		
a		Medullary infarction
b		Temporal lobe contusion
c		Sphenoid sinus hemorrhage
d		Phenytoin use to prevent seizures
e	*	Avulsion of olfactory rootlets
An 18-year-old boy is brought into the emergency room after diving into a shallow pool. He is awake and alert, has intact cranial nerves (CNs), and is able to move his shoulders, but he cannot move his arms or legs. He is flaccid and has a sensory level at CAppropriate management includes which of the following?		
a		Naloxone hydrochloride
b	*	Intravenous methylprednisolone
c		Oral dexamethasone
d		Intubation and preparation for immediate surgery
e		Hyperbaric chamber therapy
A 53-year-old office worker presents to clinic stating, “My hands are numb.” Upon questioning she says that both of her hands have a sensation like “a shot at the dentist.” She also believes that her hands are weaker than they used to be. It fluctuates during the course of the day, but is worst at the end of the work day and during the early morning hours. The symptoms have been progressively worsening over the past 1-to-2 years. On examination the abductor pollicus brevis is weak bilaterally, and there is decreased sensation to pinprick over the anterior portions of digits 1-to-Which of the following will most likely be positive?		
a	*	Tinel sign
b		Brudzinski sign
c		Kernig sign
d		Monrad-Krohn test
e		Babinski sign
The most striking neurological complication of von Economo encephalitis (encephalitis lethargica), a type of encephalitis that occurred in epidemic proportions along with viral influenza between 1917 and 1928, was which of the following?		
a		Blindness
b		Hearing loss
c		Paraplegia
d	*	Parkinsonism
e		Incontinence
A 37-year-old woman is noted to have lymphadenopathy on routine physical examination. Following an extensive evaluation, she is diagnosed with sarcoid. She has been entirely normal neurologically. Which cranial nerve (CN) is most likely to be injured in this patient?		
a		II
b		III
c		V
d	*	VII
e		VIII
A 17-year-old girl presents initially with fever and progressive weakness. An extensive neurological evaluation including electromyography (EMG)/nerve conduction studies (NCS) suggests a motor neuron disease. The motor neuron disease most certainly traced to a virus is which of the following?		
a	*	Poliomyelitis
b		Subacute sclerosing panencephalitis (SSPE)
c		Progressive multifocal leukoencephalopathy (PML)

d		Subacute human immunodeficiency virus (HIV) encephalomyelitis
e		Kuru
A 35-year-old woman who has received a liver transplant develops meningeal signs and fever. Cerebrospinal fluid (CSF) testing with India ink stain reveals a fungal infection. Which of the following is the cause of this patient's fungal meningitis?		
a		Aspergillus
b		Candida
c		Mucor
d	*	Cryptococcus
e		Rhizopus
A 28-year-old man who has recently immigrated from Brazil presents with 3 months of fluctuating but slowly progressive bilateral lower extremity weakness, a little worse on the left side than on the right. After a complete evaluation, a parasite is diagnosed as the etiology. This organism's ova usually damage the nervous system at the level of which of the following?		
a		Cerebrum
b		Cerebellum
c		Basal ganglia
d	*	Spinal cord
e		Peripheral nerves
A 12-year-old boy has left body weakness. A brain magnetic resonance imaging (MRI) scan reveals a polycystic lesion. The parasitic brain lesion most likely to have a large cyst containing numerous daughter cysts is that associated with which of the following?		
a		Taenia solium
b		Schistosoma haematobium
c	*	Echinococcus granulosa
d		Diphyllobothrium latum
e		Schistosoma japonicum
An 82-year-old previously healthy woman with a recent upper respiratory infection presents with generalized weakness, headache, and blurry vision. For the past 2 weeks she has had upper respiratory symptoms that started with a sore throat, nasal congestion, and excessive coughing. She went to her primary care doctor 4 days ago and was diagnosed with sinusitis. She was given a prescription for an antibiotic and took it for 2 days, then stopped. She thereafter had chills, lightheadedness, vomiting, blurry vision, general achiness, and a headache that started abruptly and has not gotten better since. Except for blurry vision, she has not had any other visual symptoms. The blurry vision remains when she closes either eye. She also has eye tenderness with movement and mild photosensitivity. She has no drug allergies. Examination findings include temperature of 5°F (16°C), nuchal rigidity, and sleepiness. Which of the following is the next most appropriate action in this case?		
a		Get a brain MRI, then perform a lumbar puncture
b		Give the patient a prescription for oral azithromycin and let her go home
c	*	Immediately give intravenous ceftriaxone plus ampicillin
d		Immediately start intravenous acyclovir
e		Obtain CSF and blood cultures and observe the patient until the results come back
A 52-year-old generally healthy woman has had a gradual neurological deterioration over the past 6 to 8 months. It began with depression and a mild change in personality. Eventually she developed weakness and nonpurposeful movements of her left hand, as well as significant cognitive decline. All serologies were negative. MRI showed abnormal restricted diffusion in portions of the cortical gray matter and deep nuclei. Electroencephalography (EEG) had diffuse slowing and triphasic waves. Routine spinal fluid examination in this patient would be expected to show which of the following?		
a	*	No abnormalities on routine studies
b		Elevated protein
c		More than 100 lymphocytes
d		More than 1000 red blood cells
e		Decreased glucose
A 17-year-old right-handed boy has had infectious meningitis eight times over the past 3 years. He has		

otherwise been generally healthy and developed normally. Recurrent meningitis often develops in persons with which of the following?		
a		Otitis media
b		Epilepsy
c		Multiple sclerosis
d		Whipple disease
e	*	CSF leaks
An 82-year-old man with a history of pulmonary tuberculosis in 1947 presents with left body weakness and neglect. MRI shows a right frontal lesion, which is subsequently biopsied. The pathology suggests that the patient has recurrent tuberculosis. This mass lesion most likely consisted of which of the following?		
a		Dysplastic central nervous system (CNS) tissue
b	*	Caseating granulomas
c		Heterotopias
d		Gram-positive bacteria
e		Mesial sclerosis
A 31-year-old homosexual man has had headache, sleepiness, and poor balance that have worsened over the past week. The patient is known to be HIV seropositive, but has done well in the past and has not seen a doctor in over 1 year. On examination, his responses are slow and he has some difficulty sustaining attention. He has a right hemiparesis with increased reflexes on the right. Routine cell counts and chemistries are normal. Which of the following is the most appropriate next step in management?		
a	*	Head computed tomography (CT) with contrast
b		Noncontrast head CT
c		Perform a lumbar puncture
d		Start antiretroviral therapy
e		Start intravenous heparin
A 52-year-old woman with acquired immune deficiency syndrome (AIDS) presents to the emergency room with mild left hemiparesis and altered mental status. A CT scan reveals several rim-enhancing lesions with minimal mass effect. Which of the following is the best next step in management?		
a		Get a cerebral angiogram
b		Order a ventricular CSF aspiration
c	*	Perform a lumbar puncture and include CSF for Epstein-Barr virus (EBV) PCR in tests ordered
d		Stop all antiretroviral therapy
e		Treat with intravenous acyclovir
A 32-year-old intravenous drug abuser presents with more than 2 weeks of left body weakness. Brain CT scan reveals several ring-enhancing lesions, and an HIV test is positive. Serological, CSF, and MRI testing support the diagnosis of an obligate intracellular parasite. Which of the following is the best treatment for HIV associated with this opportunistic infection?		
a		Intravenous acyclovir
b		Neurosurgical removal of the lesions
c		Oral fluconazole
d	*	Sulfadiazine and pyrimethamine
e		Thiabendazole
A 35-year-old woman has progressive numbness of the right arm and difficulty seeing objects in the right visual field. She is known to be HIV positive, but has not consistently taken medications in the past. On examination, she appears healthy, but has a right homonymous hemianopsia and decreased sensory perception in her right upper extremity and face. Her CD4 count is 75 cells per μL, and her MRI is consistent with a demyelinating lesion of the left parietooccipital area. CSF PCR for JC virus is positive. Which of the following is the most appropriate treatment in this case?		
a		Amphotericin B
b		Cranial radiation
c	*	Highly active antiretroviral therapy (HAART)
d		Intravenous acyclovir
e		Intravenous ceftriaxone

A 72-year-old right-handed woman has 2 days of headache and fever, followed by worsening confusion. She is taken to the hospital after having a generalized seizure. A head CT is consistent with left temporal hemorrhage and swelling. Localization of encephalitis to the medial temporal or orbital frontal regions of the brain is most consistent with which of the following?		
a		Treponema pallidum
b		Varicella zoster virus
c	*	Herpes simplex virus
d		Cryptococcus neoformans
e		Toxoplasma gondii
A 21-year-old college student was found walking around his dormitory naked. He is disoriented, inattentive, and shows poor comprehension. In the emergency room he is found to have a fever of 102°F (8°C). There are no apparent motor, sensory, or coordination abnormalities. The emergency room physician orders a brain MRI and then decides to perform a lumbar puncture. Neuroimaging of the brain before attempting a lumbar puncture is advisable in cases of acute encephalitis for which one of the following reasons?		
a		The diagnosis may be evident on the basis of MRI alone
b	*	Massive edema in the temporal lobe may make herniation imminent
c		The CT picture may determine whether a brain biopsy should be obtained
d		Shunting of the ventricles is usually indicated, and the imaging studies are needed to direct the placement of the shunt
e		It may establish which pathology is responsible
A 67-year-old man presents with headache, fever, disorientation, and seizures. CSF testing establishes that the patient has the most common form of acute encephalitis. The CSF changes late in the course of this disease typically include which of the following?		
a	*	An increased number of lymphocytes
b		A glucose content of less than two-thirds the serum level
c		A protein content of less than 45 mg/dL
d		A normal opening pressure
e		A predominance of polymorphonuclear white blood cells (WBCs)
A 27-year-old man presents to his primary care doctor with a low-grade fever, headache, and neck stiffness, which have become more bothersome over the past 1-to-2 weeks. CSF and serological testing for Lyme disease is positive, and antibiotic treatment is initiated. The cranial neuropathy most commonly found with Lyme disease is that associated with damage to which CN?		
a		III
b		V
c	*	VII
d		IX
e		XII
The pathologic specimen depicted here shows the only intracranial lesion found in this patient. This patient would be expected to exhibit which of the following symptoms?		
a		Seizures
b	*	Gait ataxia
c		Hemiparesis
d		Visual loss
e		Hallucinations
A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis. This condition is usually acquired through which of the following means?		
a	*	Freshwater swimming
b		Eating contaminated meat
c		Eating calves' brains
d		Anal intercourse
e		Animal bites
A 40-year-old man died from complications related to AIDS. Prior to his death, there had been a steady		

cognitive decline. Both HIV and cytomegalovirus infections in the brain characteristically produce which of the following?		
a		Senile plaques
b		Intraneuronal amyloid
c		Intranuclear inclusions
d		Intracytoplasmic inclusions
e	*	Microglial nodules
Following several days of low-grade fever and mild neck and head pain, a 10-year-old boy develops bilateral face drooping and difficulty fully closing his eyes. Serum is positive for Borrelia burgdorferi IgM. CSF polymerase chain reaction (PCR) is also positive for this organism's DNA. After B burgdorferi is introduced by the tick that carries it, the skin around the bite develops which of the following?		
a		An exfoliative dermatitis
b		Purpura
c		Localized edema
d	*	Erythema chronicum migrans
e		Vesicular lesions
A 59-year-old right-handed woman has been clinically diagnosed with encephalitis. While CSF and MRI studies are pending, a medical student suggests ordering an EEG. Which of the following EEG findings is most associated with herpes encephalitis?		
a		α Activity over the frontal regions
b		β Activity over the temporal regions
c		Three-per-second spike-and-wave discharges
d	*	Bilateral, periodic epileptiform discharges
e		Unilateral δ activity over the frontal region
A 9-year-old boy presents with bilateral CN VII deficits. Serum and CSF analysis suggests B burgdorferi is the etiology. Which of the following medications is the most appropriate treatment?		
a		Streptomycin
b	*	Ceftriaxone
c		Gentamicin
d		Isoniazid
e		Rifampin
A 41-year-old homosexual man is brought to medical attention by his partner because of headache, sluggish mentation, and impaired ambulation worsening over the previous week. The patient is known to be HIV seropositive, but has done well in the past and has not sought regular medical attention. On examination, his responses are slow and he has some difficulty sustaining attention. He has a right hemiparesis with increased reflexes on the right. Routine cell counts and chemistries are normal. A contrast head CT reveals several ring-enhancing lesions. Eventually, surgical aspiration of one of the lesions reveals that they are abscesses. Abscesses in the brain most often develop from which of the following?		
a	*	Hematogenous spread of infection
b		Penetrating head wounds
c		Superinfection of neoplastic foci
d		Dental trauma
e		Neurosurgical intervention
A 50-year-old woman presents to the emergency room with lethargy, fever, and moderately low blood pressure. She has a fever workup, is started on IV fluids and antibiotics, and is then admitted to the hospital. A diagnosis of bacterial endocarditis is made. On day 2 of her admission, she has developed a right upper extremity drift and her speech has decreased fluency. A head CT reveals a rim-enhancing lesion in the left frontal lobe. Which of the following is the most common site for formation of this type of lesion?		
a		Putamen
b		Thalamus
c		Head of the caudate
d	*	Gray-white junction
e		Subthalamus

A 70-year-old man presents with right body (face and arm > leg) weakness, which he says has gradually developed over several months. Medical history includes hypertension, smoking, and the occasional use of prostitutes. RPR serological testing is positive. Which of the following consequences of this patient's likely diagnosis may present a picture easily confused with brain tumor?		
a		A reaction to penicillin treatment occurs
b	*	An intracranial gumma forms
c		Tabes dorsalis is the primary manifestation of the disease
d		Meningovascular disease develops
e		The patient is a newborn with congenital acquired disease
A 9-year-old girl is playing in a wooded area of her backyard. She notices a furry animal in the brush. As it does not seem to fear her, she approaches to pet it. As soon as she touches the creature, it bites her and runs away. Her parents bring her to the emergency room for evaluation. The emergency room physician is extremely concerned that the patient may have been exposed to a deadly virus and orders immediate injections of immunoglobulin. From the brain, this pathogen establishes itself for transmission to another host by spreading to which of the following?		
a		Intestines
b		Nasopharynx
c		Lungs
d		Bladder
e	*	Salivary glands
A 38-year-old man, who is immunocompromised because of HIV, presents with 1 month of worsening right headache, ear pain, and fever. He is determined to have malignant external otitis and osteomyelitis of the base of the skull. Culture of the lesion reveals a fungal etiology. What is the most likely causative organism?		
a		Nocardia
b		Cryptococcus neoformans
c		Actinomyces
d	*	Aspergillus
e		Candida
A 55-year-old woman has progressive dementia over the past year. Within the past 3 months she has also developed dysarthria, myoclonus, intention tremor, and hyperreflexia. CSF VDRL is positive. This patient's symptoms are being caused by which of the following?		
a		A response to penicillin treatment
b		An autoimmune reaction
c		An acute meningoencephalitis
d	*	A chronic meningoencephalitis
e		A chronic rhombencephalitis
Which of the following is the most common cause of brain abscess in patients with AIDS?		
a		Cryptococcus neoformans
b	*	Toxoplasma gondii
c		Tuberculosis
d		Cytomegalovirus
e		Herpes zoster
A 35-year-old woman is bitten by a small doglike wild animal while camping. The animal immediately runs away. Her skin is barely broken, and, besides feeling a little frightened, she says that she is fine. Despite this, her friend convinces her to be evaluated in the nearest emergency room. Which of the following viruses that typically invade the CNS by extending centripetally (ie, inward away from the periphery) along peripheral nerves is the woman most at risk for?		
a		Mumps
b		Measles
c		Varicella zoster
d		Polio
e	*	Rabies
A 39-year-old man was treated 1 year ago for a brain abscess. He has largely recovered, but still has occasional		

word-finding difficulties. Which of the following is the most common symptom in patients with brain abscess?		
a		Nausea and vomiting
b		Ataxia
c	*	Headache
d		Neck stiffness
e		Seizures
A 75-year-old left-handed woman presented to the emergency room with what at first was thought to be a stroke. History was significant for pneumonia 5 weeks ago. Following neuroimaging, the situation became less clear, and ultimately an enhancing brain lesion was aspirated via stereotaxic needle placement. Culture of the aspirate grew out bacteria. The most likely organism is which of the following?		
a	*	Streptococcal
b		Staphylococcal
c		Bacteroides spp.
d		Proteus spp.
e		Pseudomonas spp.
A 52-year-old woman develops progressive dementia, tremors, gait ataxia, and myoclonic jerks over the course of 6 months. Her speech is slow and slurred, and hand movements are clumsy. No members of her immediate family have a history of degenerative neurological disease. MRI of the head reveals a subtle increase in T2 signal in the basal ganglia bilaterally. EEG reveals disorganized background activity with periodic sharp-wave discharges that occur repetitively at 1-second intervals and extend over both sides of the head. Arteriogram reveals no vascular abnormalities. The clinical picture is most consistent with which of the following?		
a		Multi-infarct dementia
b		Tabes dorsalis
c		Friedreich disease (Friedreich ataxia)
d		Subarachnoid hemorrhage
e	*	Spongiform encephalopathy
A 91-year-old woman has 3 days of gradually worsening fever and headache. She then develops blurry vision and a stiff neck. Her granddaughter becomes concerned and brings her to the emergency room. MRI with contrast has an enhancement pattern suggesting rhombencephalitis. CSF shows a mild pleocytosis with no organisms. All blood and CSF cultures are negative. Which of the following medications is the best treatment for the organism likely responsible for the patient's condition?		
a		Penicillin G
b	*	Ampicillin plus gentamicin
c		Tetracycline
d		Ceftriaxone
e		Rifampin
A 51-year-old woman with an 8-month history of neurological decline dies after a severe bout of aspiration pneumonia. Autopsy of her brain reveals extensive loss of granule cells in the cerebellum and other changes most obvious in the cerebellar cortex. Fine vacuoles give the brain a spongiform appearance. No senile plaques are evident. The patient could have acquired this progressive disease through which of the following means?		
a		Sexual intercourse
b		A blood transfusion
c		Consumption of raw fish
d		An upper respiratory infection
e	*	Growth hormone treatment
A 27-year-old man develops recurrent episodes of involuntary movements. He abused intravenous drugs for several years and has had several admissions for recurrent infections, including subacute bacterial endocarditis. His involuntary movements are largely restricted to the right side of his body and are associated with hoarseness and difficulty swallowing. The patient has lost 40 lb over the past 4 months. Examination reveals diffuse lymphadenopathy and right-sided hypertonia. His CSF is normal except for a slight increase in protein content. CT reveals a large area of decreased density on the left side of the cerebrum. EEG reveals diffuse slowing over the left side of the head. Biopsy of this lesion reveals oligodendrocytes with abnormally large nuclei that contain darkly staining inclusions. There is extensive demyelination, and there are giant astrocytes in		

the lesion. Over the course of 1 month, the man exhibits increasing ataxia. Within 2 months, he shows evidence of mild dementia and seizures. Within 3 months of presentation, his dementia is profound, and he has bladder and bowel incontinence. Over the course of a few days, he becomes obtunded and dies. Select the condition that best fits clinical scenario.		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b		SSPE
c	*	PML
d		Rabies encephalitis
e		Guillain-Barré syndrome
An 18-year-old man notices tingling about his ankles 2 weeks after an upper respiratory tract infection. Within 2 days, he has weakness in dorsiflexion of both feet, and within 1 week he develops problems with walking. He has no loss of bladder or bowel control. His weakness progresses rapidly over the ensuing week and necessitates his being placed on a ventilator to support his breathing. He is quadriplegic, but retains control of his eye movements. CSF studies reveal a protein content of greater than 1 g/dL with a normal white cell count. There are no red blood cells in the CSF. Select the condition that best fits clinical scenario.		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b		SSPE
c		PML
d		Rabies encephalitis
e	*	Guillain-Barré syndrome
Over the course of 6 months, a 50-year-old immigrant from Eastern Europe develops problems with bladder control, an unsteady gait, and pain in his legs. On examination, it is determined that he has absent deep tendon reflexes in his legs, markedly impaired vibration sense in his feet, and a positive Romberg sign. Despite his complaint of unsteady gait, he has no problems with rapid alternating movement of the feet, and no tremors are evident. He has normal leg strength. The pain in his legs is sharp, stabbing, and paroxysmal. His serum glucose and glycohemoglobin levels are normal. Select the condition that best fits clinical scenario.		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b		SSPE
c	*	Tabes dorsalis
d		Neurocysticercosis
e		Bartonella henselae encephalitis
A 10-year-old girl is referred to a physician because of rapidly deteriorating school performance. Over the course of a few weeks, the child has lost interest in her schoolwork, appeared apathetic at home, and had frequent temper tantrums with little provocation. A psychiatric evaluation reveals that, in addition to emotional lability, the child has substantial intellectual deficits that appear to be new. Within 1 month of this evaluation, the child has a generalized tonic-clonic seizure. A neurologist examining the child discovers chorioretinitis, ataxia, hyperactive reflexes, and bilateral Babinski signs. Her EEG exhibits periodic bursts of high-voltage slow waves followed by recurrent low-voltage stretches (burst suppression pattern). The CSF is remarkable for an increase in the γ-globulin fraction. The child becomes increasingly lethargic and obtunded over the ensuing 2 months. She remains in a coma for several months before dying. Select the condition that best fits clinical scenario.		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b	*	SSPE
c		PML
d		Rabies encephalitis
e		Guillain-Barré syndrome
A 37-year-old female navy officer presents with 3 days of confusion and seizures. Her colleagues report that she has been acting strangely for 3 days. This is followed by generalized status epilepticus. The woman has previously been well. She has traveled to the Caribbean several times annually, and she has a new pet cat. General examination discloses epitrochlear lymphadenopathy. Neurological examination shows the woman to be in status epilepticus. CSF is negative; MRI shows increased signal in the pulvinar bilaterally. Select the condition that best fits clinical scenario.		
a		Rabies encephalitis

b		Guillain-Barré syndrome
c		Tabes dorsalis
d		Neurocysticercosis
e	*	Bartonella henselae encephalitis
A 29-year-old immigrant from El Salvador is brought to the emergency room after a generalized seizure. After awakening, he relates that he has had two or three episodes of unexplained loss of consciousness in the past 2 years. He has otherwise been healthy. He served in the Salvadoran military for 3 years. His examination is normal. CT scan with contrast reveals two small hyperintense foci in the right frontal lobe, as well as a 1-cm cystic lesion with a nodular focus within it in the left frontal region. The cyst wall of the latter lesion enhances with contrast. The two right frontal lesions do not enhance. Select the condition that best fits clinical scenario.		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b		Guillain-Barré syndrome
c		Tabes dorsalis
d	*	Neurocysticercosis
e		Bartonella henselae encephalitis
A 65-year-old right-handed woman began having neurological problems about 1 week ago. She began experiencing nausea, vomiting, and numbness in the left hand and left foot. Today she had a generalized convulsion, and since then she has had a throbbing headache that is worse when she bends forward. On examination, the only deficits she has are loss of double simultaneous tactile stimulation and left lower facial droop when smiling. MRI reveals a lesion suggestive of a primary brain tumor. Which of the following is the most common source of primary brain tumors?		
a	*	Glial cells
b		Neurons
c		Meningeal cells
d		Lymphocytes
e		Endothelial cells
A previously healthy 31-year-old man collapses in the kitchen of his home while sitting at the table talking. His wife witnessed a convulsion that lasted about 2 minutes. He seems to recover fully within an hour. The history taken in the emergency room reveals that he has been having new headaches in the early morning hours over the past few weeks. A brain magnetic resonance imaging (MRI) indicates that there is an enhancing right frontal lesion that is most likely a primary brain neoplasm. Which of the following is the most common type of primary brain tumor?		
a		Meningioma
b	*	Astrocytoma
c		Lymphosarcoma
d		Oligodendroglioma
e		Medulloblastoma
A 7-year-old girl has been diagnosed with a brain tumor. The parents are both well educated with a scientific background and have many questions. During the course of the discussion, you might tell them that most brain tumors in children are which of the following?		
a		Metastatic lesions from outside the central nervous system (CNS)
b		Oligodendrogliomas
c		Glioblastomas multiforme
d		Meningiomas
e	*	Infratentorial
As you provide the parents of the patient (see question 173) with some information, it prompts many more questions. The overall incidence of primary brain tumors in children is approximately 1-to-5 per 100,000 per year. Which of the following account for the majority?		
a		Meningiomas and neurofibromas
b	*	Astrocytomas and medulloblastomas
c		Melanomas and choriocarcinomas
d		Gliomas and adenomas
e		Colloid cysts of the third ventricle

A 72-year-old woman has a head computed tomography (CT) performed because of headaches. It is significant for a left hemisphere mass with an overlying hyperostosis of the skull. She most likely has which of the following?		
a	*	Meningioma
b		Pituitary adenoma
c		Astrocytoma
d		Schwannoma
e		Hemangioblastoma
Upon routine examination by her pediatrician, a 9-year-old girl is discovered to have precocious puberty. More careful examination discovers the presence of papilledema. This patient is most likely to have which of the following?		
a	*	A pineal region tumor
b		An oligodendroglioma
c		A Kernohan class II astrocytoma
d		A brainstem glioma
e		An ependymoma
A 15-year-old boy has multiple angiomatoses of the retina and cysts of the kidney and pancreas. Which of the following brain tumors is most likely to develop in this child?		
a		Glioblastoma multiforme
b		Meningioma
c	*	Hemangioblastoma
d		Ependymoma
e		Pinealoma
A 56-year-old right-handed woman who had breast cancer 1 year ago began having neurological problems about 1 week ago. She began experiencing nausea, vomiting, and numbness in the right hand and foot. Today she is experiencing crescendo pain in the left retroorbital area. Her headache is throbbing and positional, particularly when she tries to bend forward. The headache was intense in the morning, and at times it woke her up last night. On examination, the only deficits are loss of double simultaneous tactile stimulation and right lower facial droop when smiling. Which of the following is the most appropriate next action?		
a		Administer intravenous prochlorperazine
b		Give the patient a prescription for zolmitriptan
c		Make a follow-up appointment for next month
d		Order an electroencephalogram (EEG) to rule out seizures
e	*	Get a brain MRI
A 60-year-old woman presents to her internist with 2 months of new headaches and some difficulty walking. Further evaluation reveals multiple brain masses. Which of the following is the most common source of metastatic tumors to the brain in patients without a known primary tumor?		
a		Breast
b	*	Lung
c		Kidney
d		Skin
e		Uterus
A 29-year-old woman with a history of malignant melanoma presents to her primary care doctor with a new type of headache. Examination is normal, and a head CT is ordered. Multiple small brain hemorrhages are revealed by the scan. Metastatic lesions to the brain most often appear in which of the following locations?		
a	*	At the gray–white junction
b		In the thalamus
c		In the posterior fossa
d		In the caudate
e		In the sella turcica
The shortest life expectancy with metastatic disease to the brain will be found in the patient with which of the following metastatic cancers?		
a	*	Malignant melanoma

b		Breast cancer
c		Lung cancer
d		Renal cancer
e		Prostate cancer
A 30-year-old, normally developed, and generally healthy man has had new intermittent headaches for 1 year. Over the past several months they have been becoming more frequent and were twice accompanied by syncope. The patient has an MRI performed, and a colloid cyst of the third ventricle is identified. Which of the following is the most common complication of this lesion?		
a		Bitemporal hemianopsia
b	*	Hydrocephalus
c		Hemiparesis
d		Optic atrophy
e		Oscillopsia
A 45-year-old right-handed man who has been human immunodeficiency virus (HIV) positive for the past 3 years has noticed some sort of visual change over the past 1 to 2 months. It is difficult for him to describe, but it is some sort of distortion of part of his right visual field. There is a 4-cm rim-enhancing lesion in the left occipital lobe that is revealed by MRI. Which of the following tumor types is common in the brain of patients with acquired immune deficiency syndrome (AIDS), but otherwise extremely rare?		
a		Lymphocytic leukemia
b		Metastatic lymphoma
c	*	Primary lymphoma
d		Kaposi sarcoma
e		Lymphosarcoma
A 37-year-old man presents with visual impairment. Examination reveals a bitemporal hemianopsia. Which of the following tumors is most likely responsible for this finding?		
a		Optic glioma
b		Occipital astrocytoma
c		Brainstem glioma
d	*	Pituitary adenoma
e		Sphenoid wing meningioma
A 9-year-old developmentally delayed girl has precocious puberty and poorly controlled seizures. Her seizures are typically preceded by episodes of uncontrollable laughter. Which of the following mass lesions might explain her symptoms?		
a		Craniopharyngioma
b		Choroid plexus papilloma
c		Giant aneurysm
d		Metastatic carcinoma
e	*	Hypothalamic hamartoma
A 35-year-old woman has worsening intermittent headaches and “dizzy spells” over the course of several months. Examination in between attacks is normal. An MRI reveals a mass in the posterior fossa suggestive of an ependymoma. This patient is potentially at risk of dying because of which of the following?		
a	*	Transforaminal herniation
b		Emboli from the tumor
c		Vascular occlusion by the tumor
d		Hemorrhagic necrosis of the tumor
e		Status epilepticus
A 30-year-old man with AIDS develops headaches and left hemiparesis and is found to have a right frontal white matter homogeneously enhancing lesion. Match clinical scenario with the appropriate type of tumor.		
a		Vestibular schwannoma
b		Choriocarcinoma
c		Metastatic carcinoma
d		Pineocytoma
e	*	Primary CNS lymphoma

A 4-year-old boy presents with ataxia, lethargy, and obstructive hydrocephalus. Match clinical scenario with the appropriate type of tumor.		
a	*	Medulloblastoma
b		Oligodendroglioma
c		Optic glioma
d		Carcinomatous meningitis
e		Vestibular schwannoma
A 16-year-old boy with café au lait spots and cutaneous nodules has a gradual decrease of vision in his left eye. Match clinical scenario with the appropriate type of tumor.		
a		Medulloblastoma
b		Oligodendroglioma
c	*	Optic glioma
d		Carcinomatous meningitis
e		Vestibular schwannoma
A 55-year-old woman presents with mild unsteadiness, tinnitus, and hearing loss. Match clinical scenario with the appropriate type of tumor.		
a		Medulloblastoma
b		Oligodendroglioma
c		Optic glioma
d		Carcinomatous meningitis
e	*	Vestibular schwannoma
A 13-year-old girl has headaches and diplopia. On examination, she has impaired upward gaze, lid retraction, and convergence-retraction nystagmus. Her pupils react on convergence but not to light. Match clinical scenario with the appropriate type of tumor.		
a		Medulloblastoma
b		Vestibular schwannoma
c		Choriocarcinoma
d		Metastatic carcinoma
e	*	Pineocytoma
A 67-year-old woman has a 2-month history of progressive gait disturbance. On examination, she has dysmetria of the limbs; a wide-based, unsteady gait; and hypermetric saccades. A hard, firm breast lump is discovered. Match each clinical scenario with the most likely causative disorder.		
a	*	Paraneoplastic cerebellar degeneration
b		Limbic encephalitis
c		Dorsal root ganglionopathy
d		Hypercalcemia
e		Cancer-associated retinopathy
A 70-year-old man with a history of lung cancer develops nausea and vomiting and then becomes lethargic. On examination, he is lethargic but arousable, disoriented, and inattentive. He is weak proximally and has diminished reflexes. Match each clinical scenario with the most likely causative disorder.		
a		Paraneoplastic cerebellar degeneration
b		Limbic encephalitis
c		Dorsal root ganglionopathy
d	*	Hypercalcemia
e		Cancer-associated retinopathy
A 57-year-old woman with a history of smoking has a 3-month history of hip and shoulder weakness. She also complains of xerostomia. There are no sensory symptoms, and she is cognitively intact. On examination, she is orthostatic. There is proximal muscle weakness, but she has increasing muscle strength with repetitive activity of her muscles. Eye movements are normal. Match each clinical scenario with the most likely causative disorder.		
a		Paraneoplastic cerebellar degeneration
b		Limbic encephalitis
c		Opsoclonus-myoclonus

d		Stiff man syndrome
e	*	Lambert-Eaton myasthenic syndrome
A 65-year-old woman develops pain and paresthesias in her feet. On examination, she has loss of reflexes, stocking distribution sensory loss, and mild distal weakness. Serum protein electrophoresis reveals a monoclonal gammopathy, and bone marrow biopsy reveals plasma cell dyscrasia. Match each clinical scenario with the most likely causative disorder.		
a		Paraneoplastic cerebellar degeneration
b		Limbic encephalitis
c		Guillain-Barré syndrome
d	*	Paraproteinemic neuropathy
e		Opsoclonus-myoclonus
In Tay-Sachs disease, the enzymatic abnormality responsible for the neurological deficits is deficiency of which of the following?		
a	*	Hexosaminidase A
b		Glucocerebrosidase
c		Phosphofructokinase
d		Glucose phosphorylase
e		Sphingomyelinase
An 8-month-old boy develops spasticity, head retraction, and difficulty swallowing. His physician discovers an abnormal accumulation of glucosylceramide and tells the parents their child will continue to deteriorate and likely die within 3 years. This child has which of the following?		
a	*	β-glucosidase deficiency
b		Niemann-Pick disease
c		Krabbe disease
d		Fabry disease
e		Tay-Sachs disease
A 53-year-old left-handed man presents with asterixis, esophageal varices, splenomegaly, and abdominal ascites. He is likely to exhibit altered consciousness on the basis of which of the following?		
a		Renal tubular acidosis
b	*	Impaired hepatic detoxification of portal blood
c		Splenomegaly-induced anemia
d		Copper intoxication
e		Vitamin B_{12} deficiency
A patient has had progressive, chronic liver failure for the past 5 years. At the time of death, he would be expected to exhibit changes in which type of brain cells?		
a		Oligodendrocytes
b		Striatal neurons
c		Pigmented cells of the substantia nigra
d	*	Astrocytes
e		Inferior olivary neurons
A 42-year-old man presents to the emergency room with seizures, mental status change, and vision difficulties. A magnetic resonance imaging (MRI) reveals an abnormally high T2 signal in the posterior cerebral white matter. There is proteinuria, and blood pressure is 210/120 mm Hg. The cerebrospinal fluid (CSF) protein content of this patient is likely to be which of the following?		
a		Abnormally low
b		Normal
c	*	Elevated, but less than 100 mg/dL
d		Elevated to between 500 and 1000 mg/dL
e		Greater than 2000 mg/dL
A 65-year-old man has had many years of deteriorating kidney function caused by diabetes. At age 59, dialysis was begun because of electrolyte abnormalities. Which of the following is the most common neurological complication of chronic renal failure?		
a	*	Peripheral neuropathy

b		Delirium
c		Seizures
d		Dementia
e		Labile affect
A 70-year-old woman with end-stage renal disease tends to develop restless legs syndrome as she becomes uremic. This may be controlled with which of the following drugs?		
a		Haloperidol
b	*	L-Dopa
c		Caffeine
d		Nifedipine
e		Rifampin
A 56-year-old woman has been on dialysis for the past 10 years owing to chronic renal failure from cystic kidney disease. Which of the following is the most reliable treatment for the peripheral neuropathy associated with her condition?		
a		Thiamine supplements
b		Clonazepam
c		Phenytoin
d		Minoxidil
e	*	Renal transplant
A 68-year-old man presents with acroparesthesia, sensory ataxia, memory loss, and impotence. On examination, there are upper motor neuron signs in all four extremities. He also has anemia and a sore tongue. Eventually, a nutrient deficiency is diagnosed. This nutrient, critical for normal neurological function, must be absorbed by binding to which of the following?		
a		A cyanide atom and form cyanocobalamin
b	*	An intrinsic factor
c		The parietal cells of the stomach
d		The ileal mucosa
e		The jejunal mucosa
A patient has a borderline low vitamin B_{12} level. Testing for what compound is a more sensitive test for B_{12} deficiency?		
a		Cysteine
b	*	Methylmalonic acid
c		Methionine
d		Succinic acid
e		Propionic acid
The patient with impaired vitamin B_{12} absorption is likely to develop a positive Romberg test because of damage to which of the following?		
a		Cerebellar vermis
b		Cerebellar hemispheres
c		Spinal cord lateral columns
d		Basal ganglia
e	*	Spinal cord posterior columns
Which of the following types of visual field cuts is most often seen with vitamin B_{12} deficiency?		
a	*	Centrocecal scotoma
b		Homonymous hemianopsia
c		Bitemporal hemianopsia
d		Binasal hemianopsia
e		Hemianopsia with central sparing
A 42-year-old woman is being treated with methotrexate for Wegener granulomatosis. Methotrexate may be associated with the syndrome of reversible posterior leukencephalopathy. She is also at risk for megaloblastic anemia because methotrexate disturbs the metabolism of which of the following?		
a		Cobalamin

b		Iron
c		Copper
d		Pyridoxine
e	*	Folate
A 37-year-old woman develops cholecystitis and requires cholecystectomy. Her family advises the physicians involved that she has a long history of alcoholism and benzodiazepine use, including diazepam, lorazepam, and clonazepam. Approximately 7 days after the surgery, the patient becomes increasingly agitated, delusional, and suspicious. Routine investigations reveal no evidence of focal or systemic infection. Hepatic, renal, and hematologic parameters are largely normal. Within 24 hours of these cognitive and affective changes, the patient has a generalized tonic-clonic seizure. MRI and computed tomography (CT) studies of the brain are normal, and her CSF is unremarkable. In consideration of the abuse history provided by the family, medication orders prior to the surgery should have included which of the following?		
a		Haloperidol
b		Chlorpromazine
c		Trihexyphenidyl
d		Prochlorperazine
e	*	Thiamine
A 55-year-old right-handed man is admitted to the medical service for pneumonia. The patient normally drinks 4-to-8 beers per day. In anticipation of the seizures, cognitive deterioration, and autonomic instability that might occur during withdrawal, which of the following is the most appropriate measure to take?		
a		Consult a “detox center” to start planning the patient’s discharge
b		Provide intravenous alcohol supplements to blunt the alcohol withdrawal
c	*	Provide intramuscular or oral chlordiazepoxide several times daily at a dose dictated by the patient’s level of agitation
d		Start phenytoin as a single dose nightly
e		Delay pneumonia treatment until the risk of neurological problems abates
A 26-year-old man develops hemoptysis and dyspnea over the course of 3 months. His physician suspects tuberculosis and starts him on triple therapy with isoniazid (isonicotinic acid hydrazide), rifampin, and ethambutol. After 1 month of treatment, the patient’s liver enzymes show slight elevations, but the treatment is continued. The hemoptysis stops by 2 months, but the patient complains of pins-and-needles sensations in his feet. Neurological examination reveals hypoactive deep tendon reflexes in the legs and slightly impaired position sense. Strength is good in all limbs. For clinical scenario, select the nutritional deficiency that is most likely responsible.		
a		Deficiency amblyopia
b		Vitamin B_{12} deficiency
c	*	Pyridoxine (vitamin B_6) deficiency
d		α-Tocopherol (vitamin E) deficiency
e		Vitamin D deficiency
A 50-year-old woman is found wandering in the street and is brought to the emergency room by the police. She is disoriented to time, place, and person, but has no evidence of head trauma. She staggers when she tries to walk, but she has no detectable alcohol in her blood. Eye movements are abnormal with paresis of conjugate gaze, and horizontal nystagmus is apparent. Relatives are contacted, and they report that this woman has a long history of alcohol abuse. For clinical scenario, select the nutritional deficiency that is most likely responsible.		
a		Deficiency amblyopia
b		Vitamin B_{12} deficiency
c	*	Thiamine (vitamin B_1) deficiency
d		Nicotinic acid deficiency
e		Kwashiorkor
A 46-year-old man complains of progressive visual problems. He notices problems with discriminating objects both up close and far away. His deficits have progressed over the course of 3 months. He has a 12-year history of pipe smoking, a 14-year history of daily aspirin use, and a 20-year history of alcohol intake. He usually drinks 4 oz of gin daily. Examination reveals enlargement of the physiologic blind spot to the point where it extends into central vision. For clinical scenario, select the nutritional deficiency that is most likely responsible.		

a	*	Deficiency amblyopia
b		Vitamin B_{12} deficiency
c		Pyridoxine (vitamin B_6) deficiency
d		α-Tocopherol (vitamin E) deficiency
e		Vitamin D deficiency

A 32-year-old South African woman develops irritability, sleeplessness, and fatigue. Her family believes that she is depressed, but neurological assessment establishes prominent short- and long-term memory problems. She has anemia and an obvious dermatitis on her face. Her diet is strictly vegetarian and limited almost entirely to grains, such as corn. For clinical scenario, select the nutritional deficiency that is most likely responsible.

a		α-Tocopherol (vitamin E) deficiency
b		Vitamin D deficiency
c		Thiamine (vitamin B_1) deficiency
d	*	Nicotinic acid deficiency
e		Kwashiorkor

A 61-year-old man develops progressive cramping of his legs and a pins-and-needles sensation in his feet over the course of 1 year. He consults a physician when he notices paresthesias in his hands and unsteadiness of his gait. His family reports that he has had some urinary incontinence, but was too embarrassed to report it. On examination, he has a spastic paraparesis with severe disturbance of position and vibration sense in his legs. Despite obvious spasticity in the legs, the deep tendon reflexes are absent at the knees and ankles. Peripheral blood smear reveals hypersegmented polymorphonuclear leukocytes. For clinical scenario, select the nutritional deficiency that is most likely responsible.

a		Deficiency amblyopia
b	*	Vitamin B_{12} deficiency
c		Pyridoxine (vitamin B_6) deficiency
d		α-Tocopherol (vitamin E) deficiency
e		Vitamin D deficiency

A 4-year-old boy develops progressive gait ataxia and limb weakness over the course of 3 months. Neurological assessment reveals diffusely absent deep tendon reflexes, proximal muscle weakness, ophthalmoparesis, and poor pain perception in the feet. Blood tests reveal elevated creatine phosphokinase levels and abnormally high serum bilirubin levels. Further investigations of hepatic function reveal that the child has a cholestatic hepatobiliary disorder, but there is no evidence of hepatic dysfunction sufficient to cause an encephalopathy. For clinical scenario, select the nutritional deficiency that is most likely responsible.

a		Deficiency amblyopia
b		Vitamin B_{12} deficiency
c		Pyridoxine (vitamin B_6) deficiency
d	*	α-Tocopherol (vitamin E) deficiency
e		Vitamin D deficiency

A 9-month-old girl from famine-stricken Ethiopia exhibits profound apathy and indifference to her environment. She is afebrile and appears to have no significant infections at the time of her initial evaluation. Her hair is sparse, and slight edema is evident about her ankles. She is well below the fifth percentile for height in her age group. With handling she becomes irritable, but throughout her examination she exhibits little spontaneous movement. Her mother reports having seen transient tremors in the girl's hands a few weeks earlier, but these abated after a few days. For clinical scenario, select the nutritional deficiency that is most likely responsible.

a		Deficiency amblyopia
b		Vitamin B_{12} deficiency
c		Thiamine (vitamin B_1) deficiency
d		Nicotinic acid deficiency
e	*	Kwashiorkor

A 23-year-old woman with a history of hemophilia notices progressive memory difficulty. She has required little hematologic support, but she did receive transfusion of factor VIII at least five times over the past 7 years. Neurological examination reveals word-finding difficulty, poor recent and remote memory, gait ataxia, mild dysarthria, and alabile affect. Her right plantar response is extensor, and her left brachioradialis reflex is

hyperactive with transient clonus. An MRI of the brain is unrevealing. For clinical scenario, select the most likely diagnosis.		
a		Postictal state
b		Hypothyroidism
c		Uremic encephalopathy
d	*	AIDS encephalopathy
e		Pickwickian syndrome
A 35-year-old businessman has sleep attacks. He runs a chain of dry-cleaning stores, but does not usually work with the cleaning fluids. He reports falling asleep several times during the workday, even at business meetings and during interviews. He has developed the sleep attacks only after gaining more than 100 lb. His weight at the time of the examination is 324 lb. For clinical scenario, select the most likely diagnosis.		
a		Subacute combined systems disease
b		Meningococcal meningitis
c		Subacute sclerosing panencephalitis
d		AIDS encephalopathy
e	*	Pickwickian syndrome
A 19-year-old man develops obvious personality changes over the course of 2 weeks. He becomes agitated with little provocation and abuses his wife both verbally and physically. His behavior is sufficiently atypical for it to prompt his relatives to seek psychiatric assistance for him. While being interviewed by a psychiatrist, he becomes unresponsive and develops generalized convulsions with opisthotonic posturing, tonic-clonic limb movements, and urinary incontinence. He is hospitalized for investigation of his seizure disorder. On initial examination, he is noted to have a low-grade fever and a mild left hemiparesis. His CSF opening pressure is 210 mm H_2O. His CSF cultures yield no growth, and his electroencephalogram (EEG) reveals polyspike-and-wave discharges originating in the right temporal lobe. A CT of his brain reveals focal swelling of the right temporal lobe. For clinical scenario, select the most likely diagnosis.		
a		Postictal state
b		Hypothyroidism
c		Uremic encephalopathy
d		Wernicke encephalopathy
e	*	Herpes encephalitis
A previously healthy 25-year-old woman develops acute loss of vision in her left eye. She awakens with pain in the eye and reduction of her acuity to perception of light and dark. She delays seeing a physician for 1 week, during which time her acuity gradually improves sufficiently to allow her to read. On examination, the physician discovers she has slurred speech and poor rapid alternating movements with the left hand. Ocular dysmetria is evident in both eyes. Her tandem gait is grossly impaired. The physician obtains an EEG, which is normal. For clinical scenario, select the most likely diagnosis.		
a		Postictal state
b		Meningeal carcinomatosis
c		CNS toxoplasmosis
d	*	Multiple sclerosis
e		Hepatic encephalopathy
A 17-year-old man has headache and photophobia on awakening. His physician discovers a low-grade fever and resistance to neck flexion. The physician advises the patient to take acetaminophen and remain in bed for the next 24 hours. Within 12 hours, the patient develops nausea and more intense headache. He seems disoriented and inappropriately lethargic. His family brings him to an emergency room. The emergency room physician notes a petechial rash on the legs and marked neck stiffness. CSF examination reveals a glucose content of 5 mg/dL, protein content of 87 mg/dL, and cell count of 112 leukocytes, with 70% polymorphonuclear cells. For clinical scenario, select the most likely diagnosis.		
a		Postictal state
b		Hypothyroidism
c		Uremic encephalopathy
d		Wernicke encephalopathy
e	*	Meningococcal meningitis

A 56-year-old man is struck over the parietal area of the head during a robbery. He loses consciousness for 35 minutes but has no focal weakness or numbness on regaining consciousness. Within 2 days of the incident, his wife finds him unresponsive in bed early in the morning. She calls for an ambulance, but before it arrives her husband becomes more alert and asks for something to eat, saying he wants to have some supper before he goes to bed for the night. The ambulance attendant first on the scene notes that the patient is disoriented to place and time and has weakness of his right arm and leg. For clinical scenario, select the most likely diagnosis.		
a	*	Postictal state
b		Hypothyroidism
c		Uremic encephalopathy
d		Wernicke encephalopathy
e		Herpes encephalitis
A 35-year-old woman is found unconscious on the floor of her apartment. A bottle of cleaning fluid is found on a table near her. One of the contents indicated in the fluid is carbon tetrachloride. The ambulance crew notes that the patient is breathing independently, but her breath has a distinctly fetid odor unlike that associated with the cleaning fluid. Her limbs are flaccid, and she groans when she is moved. She does not respond to inquiries and is poorly responsive to pain. A serum ammonia level obtained at the emergency room is 250 mg/dL, triple the normal level. EEG reveals triphasic waves, most prominently over the front of the head. For clinical scenario, select the most likely diagnosis.		
a		Postictal state
b		Hypothyroidism
c		Multiple sclerosis
d	*	Hepatic encephalopathy
e		Subacute combined systems disease
A 75-year-old woman with suspected normal-pressure hydrocephalus undergoes lumbar puncture. Forty milliliters of fluid are removed. Three hours later, she is able to walk unassisted and turns well. Spinal fluid would be expected to show which of the following?		
a	*	No abnormalities
b		Elevated protein
c		Low protein
d		Atypical lymphocytes
e		Low glucose
A physician believes that her patient has Alzheimer disease. Which of the following is most characteristic of the brain in patients with Alzheimer disease?		
a	*	Neuronal loss in the cerebral cortex
b		Demyelination in the cerebral cortex
c		Posterior column degeneration
d		Neuronal loss in the cerebellar cortex
e		Pigmentary degeneration in the hippocampus
An 80-year-old man has had a gradual memory decline over the past 10 years. A reversible cause of dementia cannot be found, and positron emission tomography scan supports the diagnosis of Alzheimer disease. In the dementia associated with Alzheimer disease, the electroencephalography (EEG) will usually show which of the following?		
a		Spike-and-wave discharges
b		Periodic frontal lobe discharges
c		Focal slowing
d	*	Generalized background slowing
e		An isoelectric record
A 55-year-old man has a steep decline in his cognitive abilities over a 3-month period. Initial testing is nondiagnostic. He continues to progress and develops myoclonus and a left hemiparesis. Eventually, he dies of an aspiration about 8 months after the onset of symptoms. In the diseases that cause dementia, myoclonus is usually most evident in which of the following?		
a		Alzheimer disease
b	*	Creutzfeldt-Jakob disease

c		Parkinson disease
d		Huntington disease
e		Pick disease
A 29-year-old mentally retarded woman living in an institution has had a subacute to chronic decline in memory. Testing for reversible causes of dementia is nondiagnostic. The brain of the adult with trisomy 21 (Down syndrome) exhibits many of the histopathologic features of which of the following?		
a		Tay-Sachs disease
b		Friedreich disease
c		Pick disease
d		Parkinson disease
e	*	Alzheimer disease
An 80-year-old man has a history of 2 years of progressive gait disturbance and incontinence, which had been attributed to old age and prostatism. Within the past 3 months, he has been forgetful, confused, and withdrawn. His gait is short-stepped, and he turns very slowly, almost toppling over. He has a 30-year history of head trauma. His computed tomography (CT) scan is shown below. Which of the following is the most likely diagnosis?		
a		Alzheimer disease
b		Creutzfeldt-Jakob disease
c		Progressive multifocal leukoencephalopathy
d	*	Normal-pressure hydrocephalus
e		Chiari malformation
An 82-year-old man has 6 months of worsening memory loss. His family is concerned, and he is taken to a physician. After an extensive evaluation and neuropsychological testing, he is diagnosed with dementia. Which of the following is the most common cause of dementia in the general population?		
a		Epilepsy
b		Vascular disease
c	*	Alzheimer disease
d		Parkinson disease
e		Head trauma
A patient undergoes ventriculoperitoneal shunt placement for hydrocephalus. He is discharged 2 days later, his gait and cognition much improved. The following morning, his wife finds him lying in bed, very confused and complaining of a headache. He is unable to walk. The surgeon who performed the procedure is concerned that these new symptoms are owing to which of the following?		
a		Chemical meningitis
b	*	Subdural hematoma
c		Epidural hematoma
d		Seizures
e		Bacterial ventriculitis
A 67-year-old man has a history of progressive memory loss for 2 years. His examination is otherwise normal. A diagnosis of Alzheimer disease is made. Which of the following medications may result in some cognitive improvement?		
a	*	Donepezil
b		L-Dopa
c		Risperidone
d		Prednisone
e		Vitamin B_{12}
Language testing is most likely to uncover which of the following deficits in a patient with Alzheimer disease?		
a		No abnormalities
b		Mutism
c		Conduction aphasia
d	*	Transcortical sensory aphasia
e		Transcortical global aphasia
A 73-year-old man steps out of the shower on a Saturday evening and is unable to remember that he and his		

wife have tickets to a play. He asks her repeatedly, "Where are we going?" He appears bewildered, but is alert, knows his own name, speaks fluently, and has no motor deficits. He has no history of memory disturbance and after 8 hours returns to normal. For clinical scenario, choose the most likely diagnosis.		
a	*	Transient global amnesia (TGA)
b		Normal-pressure hydrocephalus
c		Alzheimer disease
d		Parkinson disease
e		Creutzfeldt-Jakob disease
A 50-year-old woman began having double vision and blurry vision 3 months ago and has since had diminishing interaction with her family, a paucity of thought and expression, and unsteadiness of gait. Her whole body appears to jump in the presence of a loud noise. A magnetic resonance imaging (MRI) scan and routine cerebrospinal fluid (CSF) examination are unremarkable. For clinical scenario, choose the most likely diagnosis.		
a		Transient global amnesia (TGA)
b		Normal-pressure hydrocephalus
c		Alzheimer disease
d		Parkinson disease
e	*	Creutzfeldt-Jakob disease
A 2-year-old girl developed normally until the past year. She has since become unable to speak or otherwise communicate with her parents, sits in a chair, and makes nearly continuous wringing movements with her hands. She also has episodes of breath holding alternating with hyperventilation. For clinical scenario, choose the most likely diagnosis.		
a		Transient global amnesia (TGA)
b		Normal-pressure hydrocephalus
c		Alzheimer disease
d	*	Rett syndrome
e		Multi-infarct dementia
A 17-year-old girl develops mild dementia, tremor, and rigidity. Her father died in his fourth decade of life of a progressive dementing illness associated with jerking (choreiform) limb movements. On exposure to L-dopa, she becomes acutely agitated and has jerking limb movements. For clinical scenario, choose the most likely diagnosis.		
a		Transient global amnesia (TGA)
b		Hypothyroidism
c	*	Huntington disease
d		Rett syndrome
e		Multi-infarct dementia
A 62-year-old man has had 2 years of progressive memory loss and inappropriate behavior. He has been delusional. More recently, he has developed tremors, myoclonus, dysarthria, and unsteadiness of gait. The CSF shows a lymphocytic pleocytosis, protein of 150, and positive VDRL. For clinical scenario, choose the most likely diagnosis.		
a		Transient global amnesia (TGA)
b		Normal-pressure hydrocephalus
c		Multi-infarct dementia
d	*	General paresis
e		Temporal lobe epilepsy
A 44-year-old woman from Africa presents with inattentiveness, poor concentration, and lethargy. She has paranoid delusions. There is mild proximal weakness and ataxia. On general examination, she has edema, coarse and pale skin, and macroglossia. On reflex examination, she has delayed relaxation of the ankle reflexes. For clinical scenario, choose the most likely diagnosis.		
a		Transient global amnesia (TGA)
b		Normal-pressure hydrocephalus
c	*	Hypothyroidism
d		Huntington disease

e		Rett syndrome
A 54-year-old woman presents with 6 months of progressive memory loss. She has limited vertical eye movements, and on examination, she has rhythmic, synchronous grimacing and eye closure movements (oculomasticatory myorhythmia). Jejunal biopsy reveals periodic acid–Schiff (PAS)–positive cells. For patient, select the likely organism that caused the disease.		
a		HTLV-I
b	*	Tropheryma whippeli
c		Treponema pallidum
d		JC virus
e		Prion protein
A 35-year-old intravenous drug abuser presents with inability to control his left hand. He reports that at times he will button his shirt with his right hand, only to find that his left hand is unbuttoning the shirt against his control. He has a history of thrush. He is alert and oriented. MRI shows an increased T2 signal affecting the subcortical white matter of the right parietal lobe without enhancement. For patient, select the likely organism that caused the disease.		
a		HTLV-I
b		Tropheryma whippeli
c		Treponema pallidum
d	*	JC virus
e		Prion protein
A previously healthy 24-year-old man presents with 3 days of headaches and fever, followed by hallucinations, speech disturbance, and lethargy. He has a mild right hemiparesis. Spinal fluid is bloody, and MRI shows abnormal signal, with enhancement, in the left anterior temporal lobe. For patient, select the likely organism that caused the disease.		
a		HTLV-I
b		Tropheryma whippeli
c		Treponema pallidum
d		JC virus
e	*	Herpes simplex virus
A 78-year-old retired electrical engineer has had a progressive cognitive decline over the past 10-to-15 years. His wife reports that every 6-to-8 months she will notice another significant decrease in his functioning. It is now at the point where he is belligerent and has little short-term memory. There is a history of hypertension and cardiac stenting after a myocardial infarction at age Examination findings include poor attention and memory, mild left hemiparesis (face, arm, and leg), and brisk reflexes throughout with upgoing toes. Which of the following is most likely to prevent further deterioration in this patient?		
a		Deep brain stimulation of subthalamic nucleus
b	*	Control of hypertension
c		Ventriculoperitoneal shunt
d		Carbidopa/levodopa
e		Psychotherapy
A 19-year-old, left-handed woman has had several weeks of nausea, vomiting, and 8 lb of weight gain. She has also noticed the recent onset of an involuntary movement disorder that involves relatively rapid and fluid, but not rhythmic, limb and trunk movements. Which of the following is the most likely diagnosis?		
a	*	Chorea gravidarum
b		Huntington chorea
c		Alzheimer disease
d		Multiple sclerosis
e		Amyotrophic lateral sclerosis
The influenza epidemic of 1918 to 1926 was associated with von Economo encephalitis and left many persons with a syndrome indistinguishable from which of the following?		
a		Sydenham chorea
b		Alzheimer disease
c		Multiple sclerosis

d		Amyotrophic lateral sclerosis
e	*	Parkinson disease
A 43-year-old man has a father who died from Huntington disease. The son was tested and found to have the gene for Huntington disease. Which of the following is true regarding the offspring of those with Huntington disease?		
a		Half the offspring are at risk only if the affected parent is male
b		Half the offspring are at risk only if the affected parent is female
c		Half the offspring are at risk if either parent is symptomatic for the disease before the age of 30
d	*	Half the offspring are at risk for the disease
e		One of four children is at risk for the disease
A 42-year-old woman has a strong family history of neurological disease, dementia, and early death. Her father died at age 55 and she has been told that she has the defective gene, making her own fate inevitable should she live long enough. Within the past year, her personality has subtly changed toward increased irritability and she has begun to develop nonpurposeful slow, rhythmic movements of her hands and face. A magnetic resonance imaging (MRI) indicates atrophy in the head of the caudate nucleus. This MRI finding would be expected to affect the shape of which of the following?		
a		Cerebellum
b	*	Lateral ventricle
c		Third ventricle
d		Lenticular nuclei
e		Temporal lobe
A 40-year-old man had undergone genetic testing several years ago for an autosomal dominant condition, which had afflicted members of his maternal family for several generations. The testing revealed he has the defective gene, and he now believes he is showing signs of the disease, including nonpurposeful movement of the extremities that are socially awkward and make daily activities more difficult. If this patient were to be exposed to L-dopa, which of the following would most likely be evoked?		
a		Generalized seizures
b		Partial seizures
c		Intention tremor
d		Scanning speech
e	*	Writhing and jerking movements of the limbs
A 26-year-old heroin addict has been using a street version of artificial heroin. The drug actually contains 1-methyl-4-phenyl-1,2,3, 6-tetrahydropyridine (MPTP). The neurological syndrome for which he is at risk is clinically indistinguishable from which of the following?		
a		Huntington disease
b		Friedreich disease
c		Sydenham chorea
d	*	Parkinson disease
e		Amyotrophic lateral sclerosis
A 61-year-old, right-handed man presents with involuntary twitches of his left hand. He first noticed between 6 months and 1 year ago that when he is at rest, his left hand shakes. He can stop the shaking by looking at his hand and concentrating. The shaking does not impair his activities in any way. He has no trouble holding a glass of water. There is no tremor in his right hand, and his lower extremities are not affected. He has had no trouble walking, and there have been no falls. There have been no behavioral or language changes. On examination, a tremor of the left hand is evident when the man is distracted. His handwriting is mildly tremulous. He has bilateral cogwheel rigidity with contralateral activation, which is worse on the left. His rapid alternating movements are bradykinetic on the left. Which of the following neurological structures is most likely dysfunctional?		
a		Cerebral cortex
b		Peripheral nerves
c		Cerebral white matter
d	*	Brainstem nuclei
e		Cerebellum

A 67-year-old woman first began having a tremor 12 years ago. Within the subsequent 2 years, she clearly had developed what appeared to be Parkinson disease. The condition has now progressed to the point where, despite aggressive medical therapy, she cannot carry out her basic daily activities. High-frequency stimulation of which of the following brain structures is most likely to improve her symptoms?		
a		Globus pallidus, medulla, parietal lobe
b	*	Globus pallidus, subthalamic nucleus, thalamus
c		Hippocampus, medulla, thalamus
d		Medulla, occipital lobe, subthalamic nucleus
e		Parietal lobe, temporal lobe, thalamus
A 78-year-old woman is referred to a neurologist for evaluation of a tremor. She says that it is not very bothersome to her, but others have noticed it. It primarily involves the right hand and apparently has been slowly worsening over the past 12-to-18 months. Examination reveals a resting tremor of the right upper extremity, accompanied by mild rigidity and slowness of rapid alternating movements. Which of the following medications is the best choice to treat the symptoms of this disease?		
a		Alteplase
b	*	Carbidopa-levodopa
c		Glatiramer
d		Interferon β-1A
e		Sertraline
The pathophysiology of Parkinson disease is thought to involve dysfunction of the substantia nigra, including loss of neurons. Postmortem study of the substantia nigra of a patient with Parkinson disease is likely to exhibit which of the following?		
a		Intranuclear inclusion bodies
b		Intranuclear and intracytoplasmic inclusion bodies
c	*	Intracytoplasmic inclusion bodies
d		Neurofibrillary tangles
e		Amyloid plaques
A 48-year-old female psychiatric patient has parkinsonism secondary to long-term neuroleptic use. Which of the following medications might minimize her parkinsonism?		
a	*	Trihexyphenidyl
b		Haloperidol
c		Methamphetamine
d		Thioridazine
e		L-Dopa
A 70-year-old woman has 1 year of worsening gait, right-hand tremor, and rigidity. She is diagnosed with Parkinson disease and improves dramatically with treatment. If her disease progresses, the decrement in speech that would be expected would result in which of the following?		
a	*	Progressively inaudible speech
b		Fluent aphasia
c		Nonfluent aphasia
d		Word salad
e		Neologisms
Even though the physiologic deficiency in Parkinson disease is of dopamine, L-dopa rather than dopamine is given to patients for which of the following reasons?		
a		L-Dopa induces less nausea and vomiting than dopamine
b		Dopamine is readily metabolized in the gastrointestinal tract to ineffective compounds
c		L-Dopa is more readily absorbed in the gastrointestinal tract than is dopamine
d	*	Dopamine cannot cross the blood–brain barrier and therefore has no therapeutic effect in the central nervous system (CNS)
e		L-Dopa is more effective at dopamine receptors than is dopamine itself
A 25-year-old man has had motor tics since age They seem to be getting worse, and now he also has involuntary obscene vocalizations. He may have largely normal behavior while being treated with which of the following?		

a		L-Dopa
b		Trihexyphenidyl
c		Phenytoin
d		Carbamazepine
e	*	Haloperidol
A 72-year-old man presented 2 years ago with asymmetric rigidity, bradykinesia, and tremor. Since that time, disease progression appears to have been minimal. He is being treated with carbidopa and L-dopa. The role of carbidopa in this case is which of the following?		
a		It has anticholinergic activity
b		It has dopaminergic activity
c		It is an antihistaminic
d		It is an antiemetic
e	*	It is a dopa decarboxylase inhibitor
After several years of successful antiparkinsonian treatment, a patient abruptly develops acute episodes of profound bradykinesia and rigidity. Remission of these signs occurs as abruptly as the onset. Which of the following is the most likely etiology?		
a		Acute dystonia
b		Absence attacks
c	*	On-off phenomenon
d		Complex partial seizures
e		Drug toxicity
A 53-year-old woman is unable to stop blinking forcefully and has frequent grimacing movements of the face. At times, she protrudes her tongue against her will. She has never taken any medications. For clinical scenario, select the most likely condition.		
a	*	Meige syndrome
b		Dopa-responsive dystonia
c		Parkinson disease
d		Olivopontocerebellar atrophy
e		Tardive dyskinesia
A 42-year-old woman has a long history of twisting movements of her head to the left. These are painful and have resulted over the years in muscular hypertrophy affecting the sternocleidomastoid and trapezius muscles. There is no family history. The remainder of her examination is normal. For clinical scenario, select the most likely condition.		
a		Meige syndrome
b		Dopa-responsive dystonia
c	*	Spasmodic torticollis
d		Whipple disease
e		Hemifacial spasm
A 40-year-old literary agent has had worsening tremor of the hands. This has been present for 2 years, but has increasingly impaired her work ability because she is frequently required to take her clients to lunch, and she is embarrassed by her inability to eat and drink normally. A glass of wine with the meal typically helps somewhat. On examination, there is a mild head tremor, but no rest tremor of the hands. When she holds a pen by the tip at arm's length, however, a coarse tremor is readily apparent. Examination is otherwise normal. For clinical scenario, select the most likely condition.		
a		Meige syndrome
b		Dopa-responsive dystonia
c		Whipple disease
d		Hemifacial spasm
e	*	Essential tremor
A 64-year-old man has noticed dragging of the right leg and tremor and stiffness of the right hand. On examination, he has a tremor of the right hand, which disappears when he reaches to grab a pen. Movements are slower on the right than the left. He has cogwheel rigidity of the right arm. For clinical scenario, select the most likely condition.		

a		Meige syndrome
b		Dopa-responsive dystonia
c	*	Parkinson disease
d		Olivopontocerebellar atrophy
e		Tardive dyskinesia

A 34-year-old man develops progressive depression and memory impairment over the course of 6 months. His initial neurological evaluation reveals a metabolic acidosis associated with his dementia. His liver is firm, and his spleen appears to be slightly enlarged. He has tremor and rigidity in his arms and walks with relatively little swing in his arms. His blink is substantially reduced, which gives him the appearance of staring. An MRI of the brain reveals some atrophy of the putamen and globus pallidus. His cerebrospinal fluid (CSF) is normal. His electroencephalography (EEG) is unremarkable. For clinical scenario, select the most likely diagnosis.

a	*	Hepatolenticular degeneration
b		Hyperparathyroidism
c		Central pontine myelinolysis
d		Akinetic mutism
e		MPTP poisoning

A 19-year-old woman develops auditory hallucinations and persecutory delusions over the course of 3 days. She is hospitalized and started on haloperidol, 2 mg three times daily. Within 1 week of treatment, she develops stooped posture and a shuffling gait. Her head is slightly tremulous, and her movements are generally slowed. Her medication is changed to a very low dose of thioridazine, and trihexyphenidyl is added. Over the next 2 weeks, she became much more animated and reports no recurrence of her hallucinations. For clinical scenario, select the most likely diagnosis.

a		Hepatolenticular degeneration
b		Hyperparathyroidism
c		Postencephalitic parkinsonism
d	*	Neuroleptic effect
e		Essential tremor

A 65-year-old man develops slurred speech, difficulty swallowing, and labored breathing over the course of 30 minutes. When he arrives at the emergency room, he requires ventilatory assistance. His arms and legs are flaccid, and he exhibits no voluntary movements in any of his limbs. He is able to blink his eyes when instructed and appears to have completely intact comprehension of spoken and written language. An MRI reveals extensive infarction of the ventral pons. The basilar artery is not visible on magnetic resonance angiography (MRA). For clinical scenario, select the most likely diagnosis.

a		Hepatolenticular degeneration
b		Hyperparathyroidism
c	*	Locked-in syndrome
d		Postencephalitic parkinsonism
e		Neuroleptic effect

A 72-year-old man requires bypass surgery to alleviate myocardial ischemia. During surgery, he has a massive myocardial infarct and protracted asystole. Resuscitative measures succeed in reestablishing a normal sinus rhythm, but postoperatively the patient remains unconscious after 48 hours. Over the ensuing weeks, the patient's level of consciousness improves slightly. He appears awake at times, but does not interact in meaningful ways with visitors. He breathes independently and even swallows food when it is placed in his mouth, but he remains mute. With painful stimuli, he exhibits semipurposeful withdrawal of his limbs. His clinical status remains unchanged for several more months. For clinical scenario, select the most likely diagnosis.

a		Hepatolenticular degeneration
b		Neuroleptic effect
c		Essential tremor
d	*	Vegetative state
e		Hypermagnesemia

A 62-year-old man exhibits excessive sleepiness, slowing of movements, mild depression, and proximal muscle weakness. His proximal limb muscles are obviously atrophied. Although his blood count is normal, routine

screening of serum chemistries reveals an elevated calcium level. He also has an elevated serum creatinine with reduced creatinine clearance. The patient has had abdominal discomfort intermittently for several months and has been told that his episodes of joint swelling were due to pseudogout. For clinical scenario, select the most likely diagnosis.		
a		Hepatolenticular degeneration
b	*	Hyperparathyroidism
c		Central pontine myelinolysis
d		Akinetic mutism
e		MPTP poisoning
A 21-year-old, right-handed female student was working in the photography lab 1 week ago, which required standing all day. After that, she experienced a cold sensation in the left foot and her entire left leg fell asleep. The feeling lasted 4-to-5 days and then slowly went away. Her right lower extremity was fine. Coughing, sneezing, and the Valsalva maneuver did not worsen her symptoms. She had a slight back pain, which she thought was due to using a poor mattress. Past history includes an episode of optic neuritis in the left eye 2 years ago. At that time, she was reportedly depressed and was sleeping constantly. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/She has not had a repeat episode since then. She had an magnetic reasonance imaging (MRI) of her brain, which was normal at that time. She drinks alcohol occasionally and does not use any illicit drugs. Her only medication is birth control pills. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands. Which of the following is the most likely diagnosis in this case?		
a		Seizure
b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis (MS)
e		Parkinson disease
A patient has brought some test results from an outside doctor with her today. One of the results indicates that oligoclonal bands were positive. What are oligoclonal bands?		
a		Wave frequency changes on the electroencephalogram (EEG) during sleep
b		Markings about the iris
c		Pathologic features of Alzheimer disease
d		Chromosomal markings found with MS
e	*	Immunoglobulin patterns in the cerebrospinal fluid (CSF) with MS
A 39-year-old woman with multiple sclerosis reports symptoms consistent with bladder spasticity and has clonus of the lower extremities. On briskly flexing her neck forward, which of the following is she most likely to report?		
a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain
A 19-year-old man had an episode of left optic neuritis, which resolved over several weeks. Two years later there was a month-long episode of bladder dysfunction. The patient underwent many tests and was told that he had multiple sclerosis. The CSF in persons with multiple sclerosis will typically exhibit which of the following?		
a		Glucose content of less than 20% of the serum content
b		Persistently elevated total protein content
c	*	Persistently elevated immunoglobulin G (IgG) content
d		Mononuclear cell counts of greater than 100 cells per μL
e		Erythrocyte counts of greater than 10 cells per μL
A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. Two years ago he had loss of sensation in his hands that progressed over weeks to motor involvement, limiting his ability to write with the left hand. He received steroids at that time. Four years ago, he began interferon β-1A. One year ago, he developed right leg weakness, constipation, and urinary		

urgency. He received steroids at that time as well. He now presents with symptoms that concern him about the possible start of a new flare. Two days ago, he noticed decreased sensation in the palm of his right hand that is worse when he exercises. This has gotten a little worse over the past 2 days. Yesterday, he noticed diminished sensation along the lower right trunk in the front and back. He has no pain, tingling, exacerbation of symptoms with neck movement, neck injury, incontinence, gait disturbance, diplopia, fever, chills, nausea, or vomiting. Examination findings include full visual fields with a left afferent pupillary defect. Bulk, strength, and tone are normal. Light touch is decreased over the left trunk and back over roughly the T8-to-T12 dermatomes. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. Which of the following is the most appropriate pharmacological treatment for this patient at this time?		
a		Interferon β-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole
A 30-year-old man was recently diagnosed with multiple sclerosis. The patient and his wife have many questions. Among them, they would like know how common multiple sclerosis is. You might tell them that multiple sclerosis is the most common demyelinating disease in the United States, affecting approximately one person in how many?		
a		100
b		500
c	*	1000
d		5000
e		10,000
A patient with suspected MS undergoes multimodality evoked potentials, EEG, MRI, and CSF testing. Which of the following evoked response patterns is most often abnormal in patients with early MS?		
a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test
A 37-year-old woman with progressive multiple sclerosis is being admitted for intravenous glucocorticoid therapy. She was diagnosed with multiple sclerosis 10 years ago after presenting with bilateral decreased visual acuity. She had an abnormal MRI at that time. She has been hospitalized approximately nine times since presentation, with her flares commonly consisting of increasing bilateral lower extremity weakness and decreased sensation manifested as a heavy feeling, waxing and waning generalized fatigue, bilateral hand tingling, and occasional nondescript speech changes that make her sound as though she has a slight accent. She has also had bilateral optic neuritis and one transient episode of aphasia in the past. She was last hospitalized 3 years ago. For the past 2 years she has been on cyclophosphamide and methylprednisolone, originally every 4 weeks, and now every 6 weeks, with the last treatment 1 month ago. She has tried and failed interferon β therapy. For the 2 months prior to admission, the patient has had worsening bilateral lower extremity weakness/heaviness, increased fatigue, and mild low back numbness, as well as intermittent and alternating decreased hearing in both ears at work. She has also noticed mild unsteadiness when walking. Which of the following should be included among her admission orders?		
a		Heart-healthy diet
b	*	Ranitidine 150 mg bid
c		Neurological checks every hour for the first 48 hours
d		Placement of central venous line
e		Stat head computed tomography (CT) for change in mental status
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on highly active antiretroviral therapy, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago, he was successfully treated for Pneumocystis carinii pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce which of the following?		

a		Adrenoleukodystrophy
b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d		Progressive multifocal leukoencephalopathy (PML)
e	*	Metachromatic leukodystrophy
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern, and results in which of the following?		
a		Anencephaly
b		Microcephaly
c		Porencephaly
d	*	Macrocephaly
e		Dolichocephaly
A 58-year-old man with a basilar tip aneurysm is referred by a neuro-surgeon. He has a 4-year history of progressive spastic paraparesis. He has recently had urge incontinence of urine. He also has numbness in the right toes more than the left and pain in the thighs and back. There have been some gradual fluctuations, but no clear, discrete episodes of deterioration. He has had no disturbances of vision, eye movement, or motor control of the upper extremities. He was referred when surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Which of the following is the most appropriate next diagnostic test?		
a		Cerebral angiography
b		Spinal angiography
c	*	MRI of the spinal cord
d		Spinal cord biopsy
e		Visual evoked potential
A 41-year-old man has had relapsing-remitting multiple sclerosis for nearly 20 years. Over that time his irreversible neurological deficits have gradually accumulated, and he now has decreased visual acuity, poor coordination, and a spastic paraparesis. Cystometrographic analysis of bladder function in this patient is likely to show which of the following abnormalities?		
a		Bladder hypotonia
b		Large residual volume of urine
c	*	Premature bladder emptying
d		Good voluntary control of bladder emptying
e		Urinary tract infection
A patient with multiple sclerosis has worsening leg weakness. He has severe spasms of his legs bilaterally and is increasingly unable to ambulate because of this. A reasonable symptomatic treatment option would be which of the following?		
a		Cyclophosphamide
b	*	Baclofen
c		Gabapentin
d		Amitriptyline hydrochloride
e		Propranolol
You are counseling a 22-year-old woman with the recent diagnosis of multiple sclerosis. She wants to know what, if any, lifestyle changes she may have to make. Which of the following factors might be expected to worsen multiple sclerosis symptoms?		
a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always		

been attributed to idiopathic papillitis. For patient, select the most likely diagnosis.		
a	*	Neuromyelitis optica (Devic disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness associated with a productive cough, a 19-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. For patient, select the most likely diagnosis.		
a		Neuromyelitis optica (Devic disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d	*	Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 24-year-old man has progressive loss of vision over the course of 5 years. A visual field examination reveals a centrocecal scotoma. Two of his cousins have similar problems with visual loss. Both of the affected relatives are male and in their twenties. Genetic testing reveals a mutation of mitochondrial DNA. For patient, select the most likely diagnosis.		
a		Neuromyelitis optica (Devic disease)
b		Acute disseminated encephalomyelitis
c		Pelizaeus-Merzbacher disease
d	*	Leber optic atrophy
e		Alexander disease
Two brothers, 4 and 7 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have abnormally low serum cortisol levels. For patient, select the most likely diagnosis.		
a		Neuromyelitis optica (Devic disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e	*	Adrenoleukodystrophy
A 3-month-old boy exhibits nystagmus and limb tremors unassociated with seizures. Over the next few years, he develops optic atrophy, choreoathetotic limb movements, seizures, and gait ataxia. He dies during status epilepticus and at autopsy is found to have widespread myelin breakdown with myelin preservation in islands about the blood vessels. The pathologist diagnoses a sudanophilic leukodystrophy to describe the pattern of staining observed on slides prepared to look for myelin breakdown products. For patient, select the most likely diagnosis.		
a		Neuromyelitis optica (Devic disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e	*	Pelizaeus-Merzbacher disease
A 54-year-old alcoholic man is brought to the emergency room with profound agitation. He is believed to have delirium tremens and is treated with thiamine and intravenous fluids. His serum sodium is noted to be markedly depressed, and intravenous supplements are adjusted to rapidly correct this hyponatremia. He becomes acutely quadriplegic and unresponsive and dies within 24 hours. For patient, select the most likely diagnosis.		
a		Neuromyelitis optica (Devic disease)
b	*	Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease

A 13-year-old girl has had a gradually worsening ataxia over the past 6 years. She also reports generalized weakness. Examination findings include height and weight to be at the 50th percentile for a 10-year-old, and a peripheral neuropathy. Serum and red-cell lipid profiles are abnormal, suggesting the diagnosis of abetalipoproteinemia. Chylomicrons, very-low-density lipoprotein (VLDL), and low-density lipoprotein (LDL) would be largely absent in the serum as a consequence of a mutation in which gene?		
a	*	Microsomal triglyceride transfer protein
b		Huntingtin
c		Amyloid precursor protein
d		Dystrophin
e		Transfer RNA (tRNA)
A newborn infant has a cystic swelling at the base of the spine that is covered with hyperpigmented skin and some coarse hair. Which of the following is the most likely explanation?		
a		Mongolian spot
b		Spina bifida occulta
c		Nevus flammeus
d	*	Meningocele
e		Encephalocele
A 26-year-old man diagnosed with von Hippel-Lindau syndrome has a postcontrast computed tomography (CT) scan that reveals a cyst and two smaller masses in the left cerebellar hemisphere. Which of the following is the best recommendation to this patient?		
a	*	Surgical resection of the cerebellar lesions as soon as possible
b		Radiation therapy of the cerebellar lesions immediately
c		Follow-up magnetic resonance imaging (MRI) in 6 months to look for involution of the lesions
d		Diagnostic lumbar puncture to look for evidence of parasitic infestation of the brain
e		Needle biopsy of the cerebellum to establish the histology of the cystic lesion
In Hirschsprung disease, neural crest cells fail to migrate normally early in fetal development and produce potentially fatal complications within months of birth because which of the following is disturbed?		
a	*	Intestinal motility
b		Bladder control
c		Swallowing
d		Bile secretion
e		Cardiac rhythms
In the tomogram below showing the base of the skull, which of the following is true regarding the first cervical vertebra?		
a		It is unremarkable
b	*	It is fused to the base of the skull
c		It is completely absent
d		It is displaced dorsally
e		It is incorporated into the odontoid process (od)
In the above x-ray, the second cervical vertebra extends above the level of the foramen magnum and places the patient at high risk of having which of the following?		
a		A meningoencephalocele
B		A myelomeningocele
c		Syringobulbia
d		Syringomyelia
e	*	Brainstem compression
A 22-year-old healthy woman has a history of mental retardation in her family. Testing has revealed fragile X syndrome as the etiology. She has brought her husband to the office visit, and they have many questions. Which of the following is true regarding women carrying chromosomes for fragile X syndrome?		
a		They are invariably normal
b	*	They have mild retardation in about one-half of cases
c		They have high-arched palates and hypotelorism
d		They have hyperextensible joints

e		They have prominent thumbs
A 35-year-old woman has prenatal testing done. The testing reveals that her child will have phenylketonuria (PKU). With PKU, serum may exhibit dangerously high levels of which of the following?		
a		Creatine phosphokinase (CPK)
b		Nicotinamide
c		Phenylketone
d		Lactate dehydrogenase
e	*	Phenylalanine
A 17-month-old boy had developed normally until approximately 13 months of age, when he began having progressive gait problems. On examination, the patient is spastic, yet nerve conduction studies (NCS) reveal slowed motor and sensory conduction velocities. Cerebrospinal fluid (CSF) protein is elevated. MRI reveals white matter abnormalities. Leukocyte testing reveals deficient arylsulfatase A activity. Which of the following tests may also provide useful diagnostic information in this condition?		
a		CT
b	*	Nerve biopsy
c		Red blood cell (RBC) morphology
d		CSF cell morphology
e		Electroencephalogram (EEG)
A 25-year-old woman with epilepsy is taking divalproex sodium during the first trimester of pregnancy. She is at increased risk of having a child with which of the following?		
a		Holoprosencephaly
b	*	Defects of neural tube closure
c		Medulloblastoma
d		Agenesis of the corpus callosum
e		Kallmann syndrome
With agenesis of the corpus callosum, MRI will reveal which of the following?		
a		Atrophy of the frontal lobes
b	*	Abnormally shaped lateral and third ventricles
c		Cerebellar aplasia
d		Schizencephaly
e		Encephaloclastic porencephaly
A boy has the onset of difficulty walking at 16 months. Reflexes are decreased. Over the course of several months, the patient becomes dysarthric and mental functioning decreases. Testing reveals that the patient has a deficiency of arylsulfatase A. Which of the following is the most likely diagnosis?		
a		Sandhoff disease
b		Tay-Sachs disease
c		Gaucher disease
d	*	Metachromatic leukodystrophy
e		McArdle disease
A 4-year-old previously healthy girl develops an intermittent red, scaly rash over her face, neck, hands, and legs. This is followed by developmental delay, emotional lability, and episodic cerebellar ataxia. She is diagnosed with Hartnup disease. Her condition may respond to large supplementary doses of which of the following?		
a		Vitamin C
b	*	Nicotinamide
c		Thiamine
d		Pyridoxine
e		α-Tocopherol
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. Which of the following is the most likely cause for this patient’s low intelligence?		
a		Turner syndrome
b		Klinefelter syndrome

c	*	Fragile X syndrome
d		Reye syndrome
e		Tuberous sclerosis
A 5-year-old boy has mental retardation, homonymous hemianopsia, and hemiparesis. He had infantile spasm and still has epilepsy. Head CT reveals calcifications in the cerebral cortex in a railroad track pattern. Which of the following does this child most likely have?		
a		Glioblastoma multiforme
b		Oligodendroglioma
c		Acoustic schwannoma
d		Craniopharyngioma
e	*	Sturge-Weber syndrome
A 35-year-old man has stumbling and slurred speech. His symptoms started several months ago and have progressed slowly but consistently. On neurological examination, he is found to have scanning speech, nystagmus, limb dysmetria, and kinetic tremor. His intellectual function is normal. Which of the following is the most appropriate initial investigation?		
a		Lumbar puncture
b		Serum drug screen
c		Routine urinalysis
d		EEG
e	*	Brain MRI
A 29-year-old woman has progressive gait disorder and dysmetria. Laboratory studies include a hematocrit of 55% and a routine urinalysis, which reveals excess protein and some RBCs in the urine. Urine culture is negative. The initial physical examination reveals an enlarged liver and spleen. Additional physical findings will most likely include which of the following?		
a		A Kayser-Fleischer ring around the cornea
b		Hypopigmented (ash-leaf) spots on the trunk
c	*	Telangiectasias in the fundi on retinal examination
d		Bilateral hearing loss
e		Generalized hyporeflexia
At age 5, a child is noted to have the loss of ankle jerks. At age 10, limb ataxia develops, followed by a peripheral neuropathy. During adolescence, retinitis pigmentosa develops. Acanthocytosis is present. These are all characteristic of which of the following?		
a		Multiple sclerosis (MS)
b		Sickle cell disease
c	*	Abetalipoproteinemia
d		Progressive multifocal leukoencephalopathy (PML)
e		HIV subacute encephalomyelitis
A 2-year-old boy with severe epilepsy is diagnosed with tuberous sclerosis. His mother has some skin findings suggesting that she is a relatively asymptomatic carrier of the disease. The child's parents would like to understand the risk that their future offspring may develop tuberous sclerosis. This condition is inherited in which of the following patterns?		
a		A sex-linked recessive pattern
b	*	An autosomal dominant pattern
c		An autosomal recessive pattern
d		A pattern most consistent with newly arising mutations
e		A pattern suggesting a mitochondrial gene defect
An infant has a head CT performed because of a large head and failure to thrive. The diagnosis of hydrocephalus is made. Congenital hydrocephalus may develop as a consequence of which of the following first-trimester maternal disorders?		
a		Complicated migraine
b	*	Viral infection
c		Pseudotumor cerebri
d		Chorea gravidarum

e		Intervertebral disk herniation
In the preceding patient, uncorrected congenital hydrocephalus will usually produce which of the following?		
a		Dolichocephaly
b		Brachycephaly
c		Holoprosencephaly
d	*	Macrocephaly
e		Microcephaly
A 6-month-old child has head lag, tongue fasciculations, and bilateral abducens palsies. MRI scan reveals a type 2 Chiari malformation. Which of the following defects would this child be likely to have?		
a		A renal cyst
b		Pulmonary atelectasis
c	*	Spina bifida
d		Holoprosencephaly
e		A hepatic cyst
A 7-year-old boy is taken by his parents to see a dermatologist. They have noticed nodules on his face and are concerned. The dermatologist tells them that their child has adenoma sebaceum. Adenoma sebaceum of the face is especially common with which of the following diseases?		
a		Neurofibromatosis
b		Sturge-Weber syndrome
c	*	Tuberous sclerosis
d		Ataxia telangiectasia
e		Fragile X syndrome
Within 6 years of his initial visit, a patient with von Hippel-Lindau syndrome returns with a pathologic fracture of his spine. Biopsy reveals metastatic cancer. Which of the following is the likely source of the tumor?		
a		Cerebral hemisphere
b		Cerebellar hemisphere
c		Liver
d	*	Kidney
e		Spleen
Which of the following retinal problems tend to occur in people with tuberous sclerosis?		
a	*	Retinal phakomas
b		Retinitis pigmentosa
c		Retinal telangiectasias
d		Retinoblastomas
e		Retinal problems are generally not part of the disease
Calcifications evident on the skull x-ray or CT scan of a patient with tuberous sclerosis usually represent which of the following?		
a	*	Calcified subependymal glial nodules
b		Calcified meningeal adhesions
c		Meningeal psammoma bodies
d		Calcified astrocytomas
e		Calcified granulomas
A 50-year-old man presenting with “dizziness” is found to have a cyst occupying 50% of his posterior fossa and incomplete fusion of the cerebellar elements inferiorly. There is no evidence of an obstructive hydrocephalus. His longevity can be estimated to be which of the following?		
a		Less than 3 months
b		Less than 1 year
c		Less than 5 years
d		Less than 10 years
e	*	Unaffected by this finding
A 1-year-old girl is evaluated for developmental delay. Examination and testing reveal that she is having hundreds of seizures per day. The clinical manifestations are somewhat subtle and consist of sit-up like		

movements. Interictal EEG shows multifocal, high-amplitude spikes (hypsarrhythmia) and slowing. Which of the following is the treatment of choice for this patient?		
a		Carbamazepine
b		Phenobarbital
c		Phenytoin
d		Divalproex sodium
e	*	Adrenocorticotropic hormone (ACTH)
A 9-year-old boy has been generally healthy. However, there is a family history of neurological disease, and his parents are concerned that his many areas of hyperpigmented skin (some more than 5 in. in diameter) may have some significance. This dermatological manifestation is commonly found on patients with which of the following diseases?		
a		Tuberous sclerosis
b	*	Neurofibromatosis
c		MS
d		Sturge-Weber syndrome
e		Ataxia telangiectasia
The newborn infant with motor neuron disease is likely to exhibit which of the following?		
a		Seizures
b	*	Hypotonia
c		Hypsarrhythmia
d		Moro reflexes
e		Spina bifida
Many children with Tay-Sachs disease develop blindness before they die, with retinal accumulation of gangliosides that produces which of the following?		
a		Optic neuritis
b	*	Cherry red spots
c		Chorioretinitis
d		Retinal detachments
e		Waxy exudates
The parents of a 10-year-old boy bring their child in to see you. The child has been diagnosed with cerebral palsy, and the parents do not really understand what this means. As part of your explanation, which of the following would you tell them?		
a		Cerebral palsy is a static encephalopathy because deficits do not appear after birth
b	*	Cerebral palsy is a static encephalopathy because the injury to the brain does not progress
c		Cerebral palsy is a static encephalopathy because affected persons fail to reach any developmental milestones on time
d		Cerebral palsy is a static encephalopathy because affected persons have resting tremors
e		Cerebral palsy is a static encephalopathy because the EEG exhibits a disorganized background rhythm
A 6-year-old child is brought to the neurologist because of developmental delay. Her morphological features are typical, and chromosome analysis confirms a diagnosis of Down syndrome (trisomy 21). The brain of this patient is expected to have which of the following characteristics?		
a	*	Smaller than normal for age and body size
b		Larger than normal for age and body size
c		Abnormally long in anteroposterior measurements
d		Hydrocephalic
e		Excessively convoluted
A 7-year-old child has a head CT ordered because of recent headaches. The scan is significant for a right parietal parenchymal defect that is continuous with the ventricle and does not appear to be lined with gray matter. This type of lesion usually develops as a consequence of which of the following?		
a		Fetal alcohol syndrome
b	*	Vascular or other destructive injuries to the fetal brain
c		Trisomy 13
d		Trisomy 21

e		Dandy-Walker syndrome
What percentage of patients with tuberous sclerosis have mental retardation?		
a		1%
b		10%
c		25%
d	*	65%
e		99%
A child is born to a 19-year-old woman who has had two to eight drinks per day throughout her pregnancy. What is the major pathologic effect of alcohol on the central nervous system of the developing fetus?		
a		Cerebral ischemia
b		Periventricular hemorrhage
c		Macrocephaly
d	*	Impaired neuronal migration
e		Holoprosencephaly
A 37-year-old man has an MRI performed by his primary care doctor because of a long history of headaches. It is notable only for the finding of a type 1 Chiari malformation. He is sent to a neurologist for further evaluation. A type 1 Chiari malformation usually becomes symptomatic as which of the following in adults?		
a		Epilepsy
b		Hydrocephalus
c	*	Ataxia
d		Dementia
e		Psychosis
A 25-year-old mother develops an illness during pregnancy. A diagnosis of cytomegalovirus (CMV) infection is made by serology. Prenatal CMV infections may produce which retinal disturbance?		
a	*	Chorioretinitis
b		Cherry red spot
c		Microaneurysms
d		Hypervascularity
e		Hemorrhage
A 65-year-old man was diagnosed with lung cancer 6 months ago. Over the past 2 months, he has had worsening severe proximal muscle weakness. He is most likely to have which of the following?		
a	*	Dermatomyositis
b		Trichinosis
c		Multiple sclerosis (MS)
d		Progressive multifocal leukoencephalopathy (PML)
e		Myasthenia gravis
A 2-year-old male child has recently been diagnosed with the most frequent type of muscular dystrophy. The parents are highly educated people, but not in the medical field. They have many specific and detailed questions. Which abnormal gene is responsible for their child's condition?		
a		Glucose-6-phosphatase
b		Hexosaminidase B
c		Myosin
d	*	Dystrophin
e		Actin
A 67-year-old woman has noticed blurry vision and weakness over the past 4 months. Her symptoms are always worse toward the end of the day. She undergoes a neuromuscular evaluation, including nerve conduction study (NCS)/electromyography (EMG), which shows a decrementing response of compound muscle action potential to 3 Hz repetitive stimulation. She is positive for anti-AChR antibodies. Which of the following is the site of disease in this patient?		
a		Anterior horn cell
b	*	Neuromuscular junction
c		Sensory ganglion
d		Parasympathetic ganglia

e		Sympathetic chain
A patient with amyotrophic lateral sclerosis develops progressive difficulty breathing. His cough becomes totally ineffective for clearing his airway, and he requires a tracheostomy. Facial muscle weakness and fasciculations are obvious at the time the tracheostomy is performed. Which of the following is the most appropriate treatment for this patient?		
a		Atropine sulfate
b		Pyridostigmine
c		Edrophonium
d		Amantadine
e	*	Chest physical therapy
A 28-year-old woman has the clinical diagnosis of myopathy and undergoes a muscle biopsy for diagnosis. The pathology demonstrates an inflammatory muscle disease characterized by noncaseating granulomas. Which of the following may have caused her symptoms?		
a		Cysticercosis
b		Tuberculosis
c	*	Sarcoidosis
d		Schistosomiasis
e		Carcinomatosis
A 62-year-old woman has limb discomfort and trouble getting off the toilet. She is unable to climb stairs and has noticed a rash on her face about her eyes. On examination, she is found to have weakness about the hip and shoulder girdle. Not only does she have a purplish-red discoloration of the skin about the eyes, but she also has erythematous discoloration over the finger joints and purplish nodules over the elbows and knees. Which of the following is the most likely diagnosis?		
a		Systemic lupus erythematosus
b		Psoriasis
c		Myasthenia gravis
d	*	Dermatomyositis
e		Rheumatoid arthritis
The rash typically associated with dermatomyositis is characterized by which of the following?		
a		Adenoma sebaceum
b		Shagreen patches
c		Target-shaped erythematous lesions on the extremities
d	*	A purplish discoloration around the eyes
e		Telangiectasias
A 32-year-old woman has several family members with Duchenne dystrophy. She has genetic testing and is known to be a carrier of the gene. A blood test may exhibit substantial elevations in her serum of which of the following?		
a		Ammonia
b		Myoglobin
c		Phosphofructokinase
d	*	Creatine phosphokinase (CPK)
e		Hexosaminidase
When examining a young child with Duchenne dystrophy, you are asked by the parents if the condition is common. You would tell them that this disease affects how many of the following?		
a		1 in 3,000 infants
b	*	1 in 3,000 male infants
c		1 in 30,000 infants
d		1 in 30,000 male infants
e		1 in 50,000 infants
A 2-year-old male child has recently been diagnosed with muscular dystrophy. The parents are highly educated people, but not in the medical field. They have many specific and detailed questions. For a female child to have Duchenne dystrophy, she must have which of the following?		
a	*	Turner syndrome (XO)

b		Klinefelter syndrome (XXY)
c		Two affected parents
d		An affected father
e		An affected brother
The spontaneous mutation rate for the dystrophin gene is presumed to be high for which of the following reasons?		
a	*	Men with Duchenne dystrophy do not reproduce
b		The incidence of Duchenne dystrophy is increasing
c		Numerous birth defects occur in families with Duchenne dystrophy
d		Men may become symptomatic after adolescence
e		Genetic studies of eggs in human ovaries reveal an excess of abnormal dystrophin genes
Intellectual function in children with Duchenne dystrophy can usually be characterized as which of the following?		
a		Markedly impaired
b	*	Slightly impaired
c		Normal
d		Slightly better than that of the general population
e		Markedly superior to that of the general population
In patients with Duchenne dystrophy, which of the following is true?		
a		Pseudohypertrophy routinely does not occur
b		Pseudohypertrophy routinely is limited to the shoulder girdle
c		Pseudohypertrophy routinely is limited to the hip girdle
d	*	Pseudohypertrophy routinely is limited to the calf muscles
e		Pseudohypertrophy routinely is limited to the thigh muscles
A 37-year-old man has difficulty relaxing his grip on his golf club after putting. He also is excessively somnolent. Examination reveals early cataract development, testicular atrophy, and baldness. His family says that he has become increasingly stubborn and hostile over the past 3 years. His electrocardiogram (ECG) reveals a minor conduction defect. An electro-myogram (EMG) will probably reveal which of the following?		
a	*	Repetitive discharges with minor stimulation
b		Polyphasic giant action potentials
c		Fasciculations
d		Fibrillations
e		Positive waves
A 75-year-old man has malaise and slowly progressive weight loss for the better part of 3 months. Laboratory tests reveal a hematocrit of 32%, an erythrocyte sedimentation rate (ESR) of 97 mm/h, and a white blood cell (WBC) count of 10,700 cells per μL. Serum CPK and thyroxine (T4) levels are normal. Which of the following is the most likely explanation for the patient's complaints?		
a		Polymyositis
b		Dermatomyositis
c	*	Polymyalgia rheumatica
d		Rheumatoid arthritis
e		Hyperthyroid myopathy
A 32-year-old man develops weakness in his hands over the course of 3 months. Further questioning reveals that he is also having trouble with swallowing. He occasionally slurs his words and has noticed progressive weakness in his cough over the preceding 4 weeks. The weakness is not substantially worse later in the day. He has no sensory symptoms associated with his weakness. Sexual function, bladder and bowel control, hearing, vision, and balance are all alleged to be unchanged. The examining physician discovers marked atrophy of the interosseous muscles of both hands. Deep tendon reflexes are hyperactive in the arms and the legs. Extensor plantar responses are present bilaterally. Rectal sphincter tone is normal. This patient's illness characteristically produces electromyographic changes that include which of the following?		
a	*	Fibrillations
b		Markedly slowed nerve conduction velocities
c		Impaired sensory nerve action potentials

d		H reflexes
e		No abnormalities
A biopsy is obtained from a clinically affected muscle in a person with several months of progressive weakness. The pathologist reports that there are numerous abnormally small muscle fibers intermingled with hypertrophied muscle fibers. The normal mosaic of muscle fiber types is disrupted. There is no significant inflammatory infiltrate. This pathologic description is most consistent with which of the following?		
a		Disuse atrophy
b	*	Denervation atrophy
c		Muscular dystrophy
d		Polymyositis
e		Hypoxic damage
A 52-year-old left-handed woman says that she has a history of myasthenia gravis. When asked about details of the history, she says that she was weak. With further prompting, the patient becomes belligerent and says that she does not remember any further details. Which of the following is the most common manifestation of muscle weakness with myasthenia gravis?		
a		Diaphragmatic weakness
b		Wristdrop
c		Footdrop
d	*	Ocular muscle weakness
e		Dysphagia
A patient with amyotrophic lateral sclerosis dies within 9 months of his initial evaluation. An autopsy is performed, but only the central nervous system (CNS) can be examined. Examination of the spinal cord would be expected to reveal degeneration of which of the following?		
a		Dorsal root ganglia
b		Posterior columns
c		Spinothalamic tracts
d	*	Corticospinal tracts
e		Spinocerebellar tracts
The shortest life expectancy is associated with which clinical sign in amyotrophic lateral sclerosis?		
a		Atrophy of the interossei
b		Atrophy of the gastrocnemius
c		Fasciculations in the lumbrical muscles
d		Atrophy of the pectoralis muscles
e	*	Fasciculations in the tongue
A 42-year-old man has had 6-to-15 drinks per day for the past 15 years. He is healthy overall, but has difficulty with tandem gait. Which of the following is the most common site of central nervous system (CNS) atrophy associated with chronic alcoholism?		
a	*	The superior vermis
b		Wernicke area
c		The supraorbital gyrus
d		The angular gyrus
e		The flocculus
An 83-year-old man gives a history of being poisoned by “jake” when drinking illicit alcohol as a young man. After doing some research you learn that “jake” is actually triorthocresyl phosphate. Triorthocresyl phosphate is an organophosphate that may cause lethal neurological complications by which of the following means?		
a		Eliciting massive intracerebral edema
b	*	Causing a severe motor polyneuropathy
c		Producing widespread CNS demyelination
d		Allowing CNS infections secondary to generalized immunosuppression
e		Inducing status epilepticus
A 1-year-old child is brought to the emergency room with an acute encephalopathy. It is determined that the etiology is lead intoxication. With severe lead poisoning, very young children may die of brain herniation secondary to which of the following?		

a		Subdural hematomas
b		Epidural hematomas
c		Intracerebral hemorrhage
d		Obstructive hydrocephalus
e	*	Massive brain edema

A 30-year-old man takes a can of beer out of his refrigerator at the end of the day and rapidly swallows a mouthful of its contents before he realizes it is not beer. Within a few minutes he develops severe abdominal cramps, blurred vision, twitching, and loss of consciousness. His wife notifies emergency medical personnel that she had placed some roach spray in the beer can for storage and had left it in the refrigerator to deal with roaches that were nesting there and that she forgot to advise her husband of this. Emergency personnel check the insecticide brand and determine that it is an organophosphate. To counteract the cholinesterase-inhibiting activity of the organophosphate poison, the man should receive which of the following?

a		Methacholine
b		Pyridostigmine
c		Physostigmine
d		Edrophonium
e	*	Atropine

A man working in a poorly regulated felt-processing plant develops tremors and memory disturbances over the course of months. He seeks medical help when tremors of his tongue and lips became embarrassing and he is injured during a fall. His family notes progressive irritability and depression. On neurological examination, he has prominent gait ataxia, limb and facial tremors, and decreased pain and temperature sense in his feet. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.

a		Lead
b		Arsenic
c		Manganese
d	*	Mercury
e		Carbon monoxide

While vacationing in Latin America, a student buys a brightly painted glazed ceramic pitcher. He drinks orange juice from the pitcher every night while studying. Within 4 months of starting this practice, he develops weakness in both wrists. He consults a physician, who finds weakness on dorsiflexion of both hands, unassociated with any sensory deficits. An electromyography (EMG) reveals evidence of a peripheral motor neuropathy. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.

a	*	Lead
b		Arsenic
c		Manganese
d		Mercury
e		Carbon monoxide

A 45-year-old woman reports to the police her discovery that her husband has added a suspicious material to her food. She has experienced matrimonial problems for several years and has developed progressive fatigue with frequent headache over the prior 3 months. She consulted a physician when she developed recurrent bouts of severe stomach pain and was told by neighbors that she had been talking to herself and attacking invisible assailants. The physician noted that she had an unexplained anemia and white lines running transversely across her fingernails. She also has had problems with her memory, excessive drowsiness, and a sensorimotor neuropathy with absent tendon reflexes. The physician sent a sample of her hair for analysis and found a neurotoxin present. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.

a		Lead
b	*	Arsenic
c		Manganese
d		Mercury
e		Carbon monoxide

An Eastern European immigrant who recently arrived in the United States is brought to the emergency room after a seizure. He first developed seizures at the age of 30 and never received treatment. Neurological examination reveals fasciculations and occasional myoclonus. He is ataxic and has absent deep tendon reflexes. A sensory neuropathy is evident in his legs. Ulcers are evident on his fingers and toes. He acknowledges that his diet was very limited before he immigrated to the United States and states that most of his calories were derived from rye grains. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.		
a		Manganese
b		Mercury
c		Carbon monoxide
d	*	Ergot
e		Nitrous oxide
A 38-year-old miner develops a shuffling gait, tremor, and drooling. His speech is difficult to understand and trails off in volume until it is inaudible. He consults a physician because of easy fatigability and frequent falls. Cogwheel rigidity is evident in his arms and legs. His tremor is most evident when his limbs are at rest. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.		
a		Lead
b		Arsenic
c	*	Manganese
d		Mercury
e		Carbon monoxide
A 35-year-old woman is rescued from a burning building. She is comatose on arrival in the ER. Her skin is cyanotic. Computed tomography (CT) scan of her head shows mild cerebral edema. After intensive care in a burn unit, she recovers markedly, but 2 weeks later, she begins to develop dystonic posturing and bradykinesia. A CT scan now shows hypodensities in the globus pallidum bilaterally. Choose the toxin that is most likely to produce each clinical scenario. Each lettered option may be used once, more than once, or not at all.		
a		Lead
b		Arsenic
c		Manganese
d		Mercury
e	*	Carbon monoxide
A 45-year-old Portuguese immigrant develops abdominal pain in the early evening after eating grouper for lunch. He later develops fatigue, headache, and paresthesias. He reports on examination that a cold tuning fork feels excessively hot to the touch. Choose the toxic substance most likely to produce clinical scenario.		
a	*	Ciguatoxin
b		Botulinum toxin
c		Saxitoxin
d		Tick paralysis
e		Ionizing radiation
A 30-year-old refugee from sub-Saharan Africa is malnourished. She has a subacute spastic paraparesis and gait instability. Cognition, sensory, and cerebellar functions are intact. Choose the toxic substance most likely to produce clinical scenario.		
a		Ciguatoxin
b		Phencyclidine hydrochloride (PCP)
c		Cocaine
d	*	Lathyrus sativus
e		Ammonia
A 5-year-old girl with long hair is hospitalized during August with a rapidly ascending flaccid quadriparesis over 2 days. She had been camping in the woods with her family during the preceding week. She develops neck, eye, and bulbar paralysis over the 8 hours after admission, ultimately requiring mechanical ventilation. Spinal fluid protein and cell levels are entirely normal. Choose the toxic substance most likely to produce clinical scenario.		

a		Ciguatoxin
b		Botulinum toxin
c		Saxitoxin
d	*	Tick paralysis
e		Ionizing radiation
A 34-year-old schizophrenic man with a history of Hodgkin disease in remission since treatment 10 years ago presents with a right middle cerebral artery territory stroke. He is found to have bilateral carotid bruits. There is no history of hypertension, diabetes, or hypercholesterolemia. He smokes cigarettes. Choose the toxic substance most likely to produce clinical scenario.		
a		Ciguatoxin
b		Botulinum toxin
c		Saxitoxin
d		Tick paralysis
e	*	Ionizing radiation
A 27-year-old man with idiopathic cardiomyopathy and right heart failure is admitted to the intensive care unit. Over several days his mental status worsens. He is disoriented and inattentive, but able to follow commands. He has prominent asterixis bilaterally. He improves 24 hours later after lactulose is administered. Choose the toxic substance most likely to produce clinical scenario.		
a		Ciguatoxin
b		Botulinum toxin
c	*	Ammonia
d		Ionizing radiation
e		Phencyclidine hydrochloride (PCP)
A patient reports horizontal double vision. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. The injury likely to be responsible for all of these observations is one involving which of the following nerves?		
a		The second cranial nerve
b	*	The third cranial nerve
c		The fourth cranial nerve
d		The sixth cranial nerve
e		None of the above
A 15-year-old obese girl has frequent headaches and early papilledema. Brain magnetic resonance imaging (MRI) and lumbar puncture confirm the diagnosis of benign intracranial hypertension. Which of the following is the treatment of choice for pseudotumor cerebri in a young woman?		
a	*	Lumbar puncture
b		Cesarean section
c		Induction of labor
d		Vitamin A supplements
e		Prednisone
Which of the following is the most common form of retinal degeneration?		
a		Serous retinitis
b	*	Retinitis pigmentosa
c		Confluent drusen
d		Drug-induced retinopathy
e		Paraneoplastic retinal degeneration
A newborn child is being examined. During ophthalmologic evaluation, it is noticed that the red reflex is absent. Which of the following could this indicate?		
a	*	Congenital cataracts
B		Chorioretinitis
c		Retinitis pigmentosa
d		Optic atrophy

e		Holoprosencephaly
Glaucoma develops in nearly one-third of children with which of the following?		
a		Type 1 neurofibromatosis
b		Type 2 neurofibromatosis
c	*	Sturge-Weber syndrome (encephalotrigeminal angiomatosis)
d		Tuberous sclerosis
e		Arnold-Chiari malformation
A 23-year-old human immunodeficiency virus (HIV)–infected woman presents with visual loss. After testing, the diagnosis of retinitis caused by cytomegalovirus (CMV) is made. Which of the following is the most appropriate treatment for this patient?		
a		Cytarabine
b		Vidarabine
c		Ribavirin
d		Interferon
e	*	Ganciclovir
A 52-year-old woman is being evaluated for the acute appearance of a large central scotoma. Which of the following most likely preceded her presentation?		
a		Pseudotumor cerebri
b		Chronic ethanolism
c		Chlorpromazine ingestion
d	*	Methyl alcohol intoxication
e		Isoniazid use
A 28-year-old man presents with right eye pain and blurry vision developing over 3 days. After examination and further history, a diagnosis of papillitis is made. How can papillitis be distinguished from the papilledema of increased intracranial pressure (ICP)?		
a		Degree of swelling of the optic disc
b		Associated homonymous hemianopsia
c	*	Characteristic visual loss
d		Associated limitation of eye movement
e		Loss of red reflex
A 19-year-old woman with headaches and visual blurring has prominent bulging of both optic nerve heads with obscuration of all margins of both optic discs. Her physician is reluctant to pursue neurological studies because the patient is 8 months pregnant and had similar symptoms during the last month of another pregnancy. Her physical and neurological examinations are otherwise unrevealing. If neuroimaging studies were to be performed on this woman, they probably would reveal which of the following?		
a		A subfrontal meningioma
b		Intraventricular blood
c	*	Slitlike ventricles
d		Transtentorial herniation
e		Metastatic breast carcinoma
A 36-year-old woman has tunnel vision in which she reports the same size area of perception regardless of how far from the testing screen the examination is performed. This history often indicates which of the following?		
a		Retinitis pigmentosa
b		Neurosyphilis
c		Sarcoidosis
d		Chorioretinitis
e	*	Conversion disorder
A young man with multiple sclerosis (MS) exhibits paradoxical dilation of the right pupil when a flashlight is redirected from the left eye into the right eye. Swinging the flashlight back to the left eye produces constriction of the right pupil. Which of the following is the most likely diagnosis?		
a		Early cataract formation in the right eye
b		Occipital lobe damage on the left
c		Oscillopsia

d		Hippus
e	*	Optic atrophy
A 23-year-old woman has 2 days of visual loss associated with discomfort in the right eye. She appears otherwise healthy, but her family reports recurrent problems with bladder control over the prior 2 years, which the patient is reluctant to discuss. On neurological examination, this young woman exhibits dysmetria in her right arm, a plantar extensor response of the left foot, and slurred speech. Which of the following would be the most informative ancillary test?		
a		Visual evoked response (VER) testing
b		Sural nerve biopsy
c		Electroencephalography (EEG)
d	*	Magnetic resonance imaging (MRI)
e		Computed tomography (CT)
Injuries to the macula or fovea centralis typically affect vision by producing which of the following?		
a		Bitemporal hemianopsia
b		Nyctalopia (night blindness)
c		Scintillating scotomas
d		Mild loss of visual acuity
e	*	Severe loss of visual acuity
A 64-year-old man who has had hypertension for more than 30 years is being examined. The most obvious changes seen during retinal examination would include which of the following?		
a		Retinal tears
b		Optic atrophy
c	*	Segmental narrowing of arterioles
d		Drusen
e		Telangiectasias
Routine funduscopic examination of a 52-year-old man reveals small, discrete red dots located in largest numbers in the paracentral region. Such retinal microaneurysms most often occur with which of the following?		
a		Sarcoidosis
b		Chronic hypertension
c	*	Diabetes mellitus
d		Anterior communicating aneurysms
e		Chorioretinitis
A 72-year-old woman presents with the acute onset of double vision. The second image disappears if she covers either eye. Which of the following nerves is most likely to be impaired in this patient?		
a		Oculomotor
b		Trochlear
c	*	Abducens
d		Ciliary
e		Müller
A 7-year-old girl acutely develops horizontal diplopia that worsens over the course of a few days. Examination reveals that the double vision is exacerbated by leftward gaze. Red glass testing reveals that the “false” image is from the left eye. She is most likely to have which of the following?		
a	*	Pontine glioma
b		Medullary glioma
c		Mesencephalic infarction
d		Pontine infarction
e		Medullary infarction
A 6-year-old girl has left facial pain and blurry vision. Careful examination reveals a deficit of the abducens nerve. Which of the following is the most likely etiology?		
a		Ischemia
b	*	Infection
c		Neoplasm

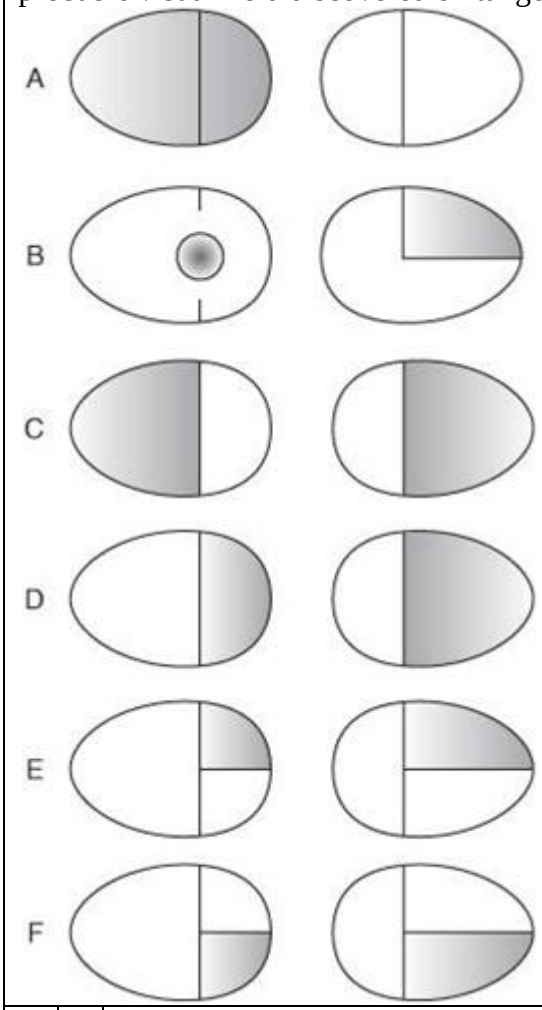
d		Trauma
e		Hemorrhage
A 19-year-old man is hit in the face with a lead pipe. The ocular motor muscle most likely to be injured in this case is that innervated by which of the following?		
a		Superior division of the third cranial nerve
b		Inferior division of the third cranial nerve
c	*	Fourth (trochlear) cranial nerve
d		Sixth (abducens) cranial nerve
e		Long ciliary nerve
A 17-year-old girl develops a painful vesicular rash around her left eye. This is followed by blurry vision that occurs only when both eyes are open. She is diagnosed with varicella zoster ophthalmicus. Which ocular motor nerve is most likely to be affected?		
a		Superior division of the third
b		Inferior division of the third
c	*	Fourth (trochlear)
d		Sixth (abducens)
e		Long ciliary
A 32-year-old woman has an MRI done because of a first seizure. No etiology for the seizure is found, but there is the incidental finding of an aneurysm. The aneurysm is 5 mm and affects the posterior communicating artery. It is very close to the third cranial nerve. The initial sign of pressure on the third nerve is usually which of the following?		
a		Impaired adduction
b		Impaired abduction
c		Impaired depression
d		Impaired elevation
e	*	Impaired pupillary constriction
A 58-year-old man with type 2 diabetes presents with the acute onset of double vision. Examination reveals a deficit of the third cranial nerve. A third-nerve palsy associated with diabetes mellitus is usually characterized by which of the following?		
a		Poor pupillodilation
b		Poor pupilloconstriction
c	*	Sparing of pupillary function
d		Inversion of the affected eye
e		Upward deviation of the affected eye
A 65-year-old man is having a neurological examination because of tingling in his feet. During the course of the examination, it is noticed that pupillary constriction occurs with attempted adduction of the globe. This suggests which of the following?		
a		Mesencephalic infarction
b		Pontine glioma
c		Acute glaucoma
d		Iridocyclitis
e	*	Aberrant third-nerve regeneration
A 35-year-old man with MS presents with blurry vision. Examination reveals that the medial rectus muscle fails to move synchronously with the contralateral lateral rectus muscle on attempted gaze to either side. When each eye is tested individually, medial rectus function is relatively preserved. In addition, prominent nystagmus is present in the abducting eye. These findings indicate evidence of which of the following?		
a	*	A mesencephalic or pontine injury
b		Thalamic hemorrhage
c		Cerebellar dysfunction
d		Cortical injury in the frontal eye fields
e		Medullary infarction
A 34-year-old woman recently emigrated from Poland. She has a history of some type of progressive, episodic neurological disease that began 5 years ago. Examination shows evidence of bilateral injury to the medial		

longitudinal fasciculus (MLF). Which of the following is the most likely diagnosis?		
a		Progressive supranuclear palsy
b	*	MS
c		Subacute sclerosing panencephalitis (SSPE)
d		Progressive multifocal leukoencephalopathy (PML)
e		Botulism
A 42-year-old man has horizontal nystagmus in primary gaze and while looking to both the left and the right. The only other examination finding is a slight gait ataxia. Which of the following is the most likely cause of this patient's induced nystagmus?		
a		Hysteria
b	*	Drug intoxication
c		Eyestrain
d		Myopia
e		Hypermetropia
A child with rapid downward deviation of both eyes followed by slow upward conjugate eye movements probably has which of the following?		
a		SSPE
b		MS
c	*	Pontine glioma
d		Cervicomedullary junction ischemia
e		Cerebral palsy
A 25-year-old man is being evaluated. Rhythmic jerk nystagmus is elicited by having the patient look at a rotating drum with stripes on it. This finding suggests which of the following?		
a		Drug toxicity
b		Brainstem ischemia
c		Parinaud syndrome
d		Unilateral parietal lobe damage
e	*	No pathologic lesion in the brain
A 36-year-old man abruptly loses vision in one eye. His retina appears cloudy and grayish yellow with narrowed arterioles. The fovea appears cherry red, and the vessels that are obvious appear to have segmented columns of blood. Which of the following is the most likely diagnosis?		
a		Chorioretinitis
b		Occlusion of the central retinal vein
c	*	Occlusion of the central retinal artery
d		Optic neuritis
e		Tay-Sachs disease
A 62-year-old man with hypertension has an episode in which he suddenly loses vision in his left eye. He is outside walking up the street, as he does every day, when suddenly the vision in his left eye goes black. When he closes his right eye, he can barely see at all. Within 2 hours, his vision is back to normal. What is the best next step to assess the patient's risk of having another attack of this kind?		
a		Transthoracic echocardiogram
b		Brain MRI
c		Brain CT
d	*	Carotid ultrasound
e		Lumbar puncture
A 5-year-old girl sustains a cut on her face from broken glass. Initially, the injury appears superficial except for a small area of deeper penetration just above the right eyebrow. Within 4 days, the child develops periorbital pain and double vision. The tissues about the eye are erythematous, and the eye appears to bulge slightly. The optic disc is sharp, and no afferent pupillary defect is apparent. Visual acuity in the affected eye is preserved. Which of the following is the most likely diagnosis?		
a	*	Orbital cellulitis
b		Cavernous sinus thrombosis
c		Transverse sinus thrombosis

d		Optic neuritis
e		Diphtheritic polyneuropathy
An otherwise healthy young woman has poorly responsive pupils that are dilated. Visual acuity is normal. A careful neurological examination reveals bilaterally absent Achilles tendon jerks. Which of the following is the most likely diagnosis?		
a		A cervical spinal cord tumor
b		A brainstem glioma
c		MS
d		A posterior communicating artery aneurysm
e	*	Benign tonic pupillary dilatation
A 32-year-old man from a rural area of southern Africa was recently brought to the United States by some of his family members who had emigrated previously. His family says that he was diagnosed with syphilis at age 16 and has taken penicillin off and on over the years, but he never completed the prescribed course. Assuming that he has neurosyphilis, which of the following is true with regard to the classic pupillary defect most likely to be observed?		
a		Completely normal (no defect)
b	*	Reacts poorly to light but accommodates well
c		Accommodates poorly but reacts well to light
d		Is pinpoint and regular in shape
e		Is fixed and dilated
A 60-year-old, right-handed man underwent heart transplantation 2 weeks ago for severe ischemic cardiomyopathy. He had an uneventful postoperative course and went home after 1 week. He is now readmitted from an outside hospital where he was admitted with headaches, increasing confusion, and a generalized seizure. He relates that he has had difficulty seeing for several days. On examination, he has a blood pressure of 180/100 mm Hg. His pupils are equal and reactive, but he has difficulty reading and finding objects presented to him. Motor and sensory functions are normal. An MRI shows several areas of T2 signal abnormality in the occipital and parietal lobe white matter bilaterally. A diffusion-weighted MRI sequence, sensitive to the changes of acute infarction, is negative. This patient's history, examination, and laboratory findings are most consistent with which of the following diagnoses?		
a	*	Cyclosporine toxicity
b		Steroid psychosis
c		Occipital lobe infarction
d		Ischemic optic neuropathies
e		Retinal detachment
A 60-year-old, right-handed man presents with visual loss. About 2 weeks before, he began to notice difficulty seeing the television. Within 1 week, he noticed that the inferior field of vision in the right eye was much worse than the top of his vision. Within a few more days, he noticed the bottom of the vision in his left eye worsen as well. This has been painless. He has otherwise felt well, without headaches or cognitive changes. An ophthalmologist saw bilateral papillitis with white exudates of the nasal part of the discs. There is no history of alcohol use, and the patient has stopped smoking since his heart transplant. On examination, he appears well. Blood pressure is 160/80 mm Hg; pulse is 100 beats per minute and regular. There are no carotid bruits. Pupils are equal and reactive. Visual acuity is 20/400 OU, with central-inferior scotomas (left larger than right). Neurological examination is otherwise normal. An MRI scan with and without gadolinium contrast agent, including orbital cuts, is negative, as is cerebrospinal fluid (CSF) examination. This patient's history, examination, and laboratory findings are now most consistent with which of the following diagnoses?		
a		Cyclosporine toxicity
b		Occipital lobe lymphoma
c		Tobacco-alcohol amblyopia
d	*	Ischemic optic neuropathies
e		Retinal detachment
Three months after an episode of anterior ischemic optic neuropathy, a patient's vision is essentially unchanged. He is able to see in his superior fields, but cannot drive. Funduscopic examination at this time is likely to show which of the following?		

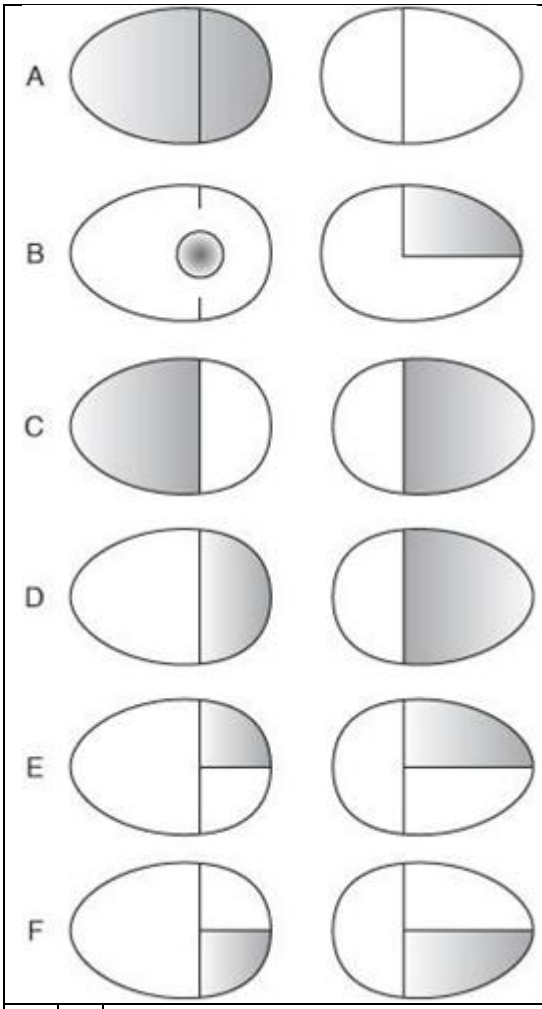
a		Papilledema
b	*	Optic disc pallor
c		Retinal exudates
d		Retinal vein enlargement
e		Drusen

A 30-year-old woman with diabetes mellitus and menstrual irregularities complains of chronic headaches with blurring of vision. On examination, she has a lantern jaw, prominent nose, spade-shaped hands, and prominent supraorbital ridges. She is slightly taller than other members of her family. For clinical scenario, select the most probable visual field discovered on tangent screen testing as depicted in the figure.



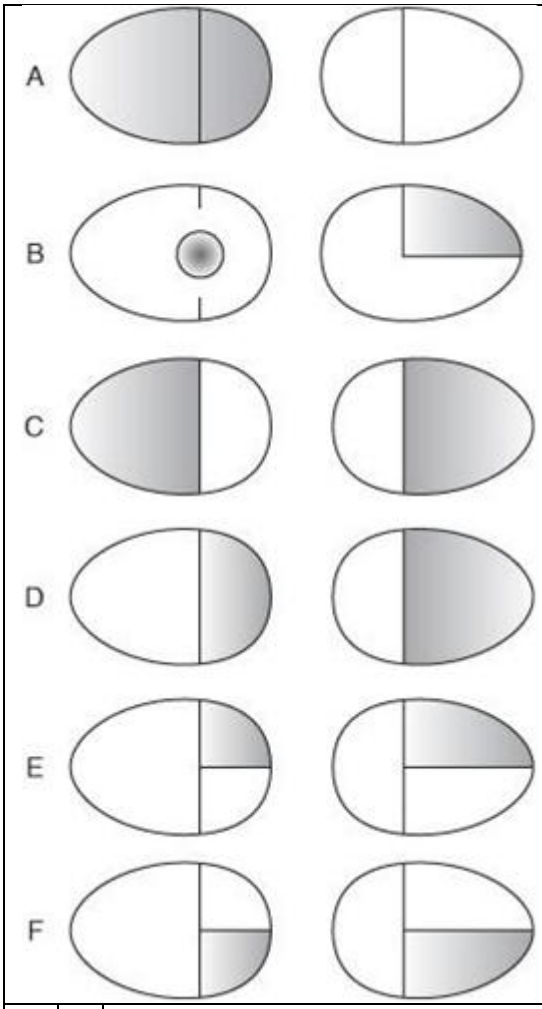
a		
b		
c	*	
d		
e		

A 17-year-old woman with recurrent enuresis notes pain and visual problems in her left eye. Six months before the development of the visual difficulty, she had transient weakness in both legs for 2 days. Her parents noted slurring and slowing of her speech that appeared to persist long after the transient gait ataxia and leg weakness resolved. For clinical scenario, select the most probable visual field discovered on tangent screen testing as depicted in the figure.



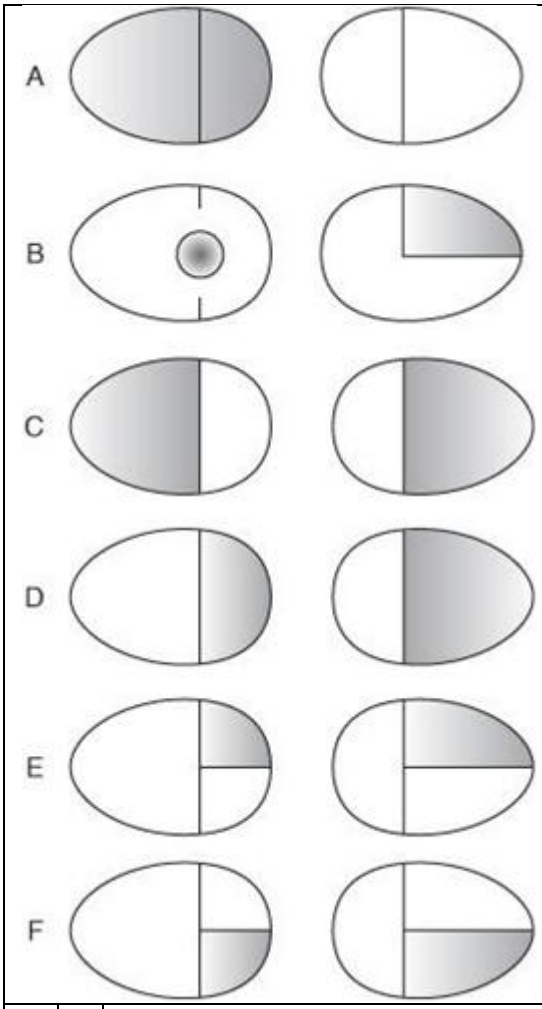
a	*	
b		
c		
d		
e		

A 40-year-old man sustains a gunshot wound to the back of the head. An MRI reveals extensive damage to the left occipital lobe with sparing of the right occipital lobe. For clinical scenario, select the most probable visual field discovered on tangent screen testing as depicted in the figure.



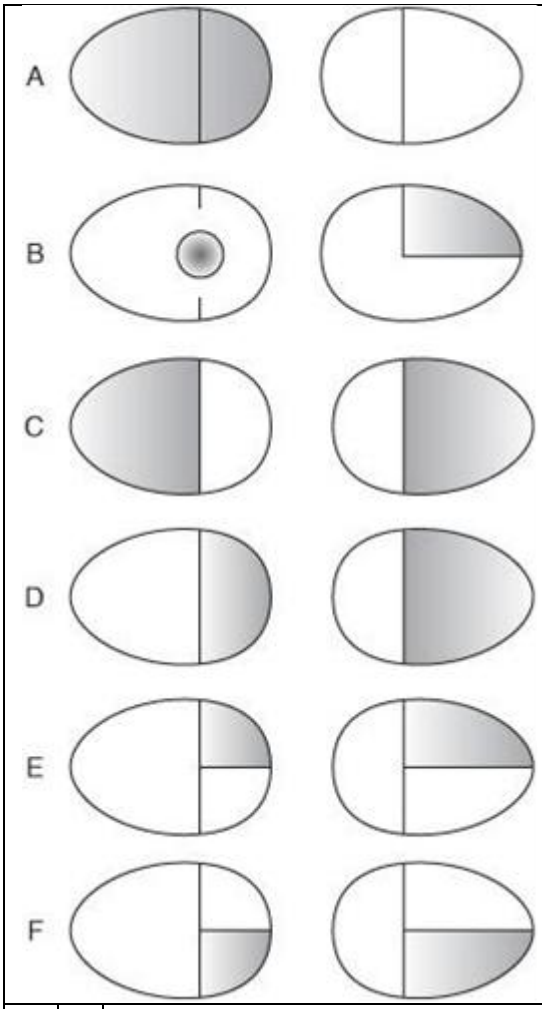
a		
b		
c		
d	*	
e		

A 51-year-old woman has progressive loss of visual acuity in her left eye. Over the course of 5 years, her acuity has deteriorated from 20/20 to 20/An MRI of her brain reveals a large meningioma impinging on the left side of the optic chiasm. There is no associated hydrocephalus. For clinical scenario, select the most probable visual field discovered on tangent screen testing as depicted in the figure.



a		
b	*	
c		
d		
e		

A 65-year-old man develops language problems with no loss of consciousness. He is found to have a receptive aphasia, and an MRI scan confirms an area of infarction in the left temporal lobe confined to structures above and lateral to the temporal horn of the lateral ventricle. For clinical scenario, select the most probable visual field discovered on tangent screen testing as depicted in the figure.



a		
b		
c		
d		
e	*	

An 89-year-old man has noticed that his hearing has gradually worsened with aging. The examining physician applies a vibrating tuning fork to his right mastoid process. The moment the sound can no longer be heard, the fork is held near the auditory meatus and the patient can again hear it. His deafness has probably developed because of which of the following?

a		Calcification of ligaments stabilizing the ossicles
b		Weakness of the tensor tympani
c	*	Neuronal degeneration
d		Weakness of the stapedius muscle
e		Granulation tissue in the middle ear

A 65-year-old diabetic woman has aphasia secondary to a stroke involving the inferior division of the left middle cerebral artery. Her hearing is intact. Which of the following correctly reflects why dominant temporal lobe infarction will not produce complete deafness?

a		There is no temporal lobe representation for hearing
b	*	Each cochlear nucleus projects to both temporal lobes
c		Deafness results with nondominant hemisphere damage
d		Both thalamic and temporal lobe damage must occur
e		Both brainstem and temporal lobe damage must occur

A 72-year-old man is having difficulty hearing. He is being tested with a tuning fork. If he has disease of the middle ear, sound transmitted strictly by air conduction will be perceived as which of the following?

a		Louder than that transmitted by bone conduction
b	*	Quieter than that transmitted by bone conduction

c		Lower pitched than that transmitted by bone conduction
d		Higher pitched than that transmitted by bone conduction
e		Oscillating between high and low pitch
A 13-year-old girl has a severe case of mastoiditis. Despite treatment, she develops a fluent aphasia. Her aphasia is most likely the result of extension of the infection into which portion of the brain?		
a		Frontal lobe
b		Parietal lobe
c	*	Temporal lobe
d		Occipital lobe
e		Cerebellum
A 19-year-old soldier stationed in Iraq was exposed to an exceptionally loud nearby explosion. There was an initial severe loss of hearing followed by partial recovery. Which of the following best describes her hearing loss?		
a	*	High-tone sensorineural loss
b		Low-tone sensorineural loss
c		High-tone conductive loss
d		Low-tone conductive loss
e		Central deafness
A 79-year-old woman is brushing her teeth when she has an intense sensation that the room is moving as if she were on a ship. Examination and testing reveal a cerebellar stroke. Cerebellar damage may be associated with severe vertigo if the tissue damaged is in the distribution of which of the following arteries?		
a		Superior cerebellar artery
b	*	Posterior inferior cerebellar artery (PICA)
c		Anterior inferior cerebellar artery (AICA)
d		Anterior spinal artery
e		Posterior cerebral artery
A 62-year-old man has started getting a haircut every week. Whenever he lays his head back to have his hair washed, he has the sensation of spinning. With vertigo that develops on extreme extension or rotation of the head, the patient probably has insufficiency in which of the following?		
a		Left subclavian artery
b		Internal carotid arteries bilaterally
c	*	Vertebrobasilar system
d		Internal maxillary artery
e		Innominate artery
A 45-year-old left-handed man has had recurrent attacks of “dizziness.” He describes the sensation of feeling the room spinning. The episodes occur abruptly and usually last for approximately 45 minutes. The dizziness occurs about once per month, but may happen more frequently. There is often accompanying ringing and decreased hearing in one ear. Which of the following most accurately describes the early hearing loss in this disease?		
a		Overall frequencies
b		Primarily over high frequencies
c		Primarily over middle frequencies
d	*	Primarily over low frequencies
e		In virtually no patients
A 52-year-old diabetic man on multiple medications develops vertigo. Which of the following may cause a toxic labyrinthitis?		
a		Promethazine
b		Penicillin
c		Dimenhydrinate
d	*	Acetylsalicylic acid
e		None of the above
A 50-year-old man is being evaluated for tinnitus. It is worse on some days than others. Which of the following should he be told may exacerbate the tinnitus?		

a		Alcohol
b	*	Aspirin
c		Glucose
d		Diazepam
e		Steroids
A 26-year-old man has multiple hyperpigmented lesions, each over 5 cm. Which of the following tumors is most likely to occur in this patient?		
a		Medulloblastoma
b		Acoustic schwannoma
c	*	Neurofibroma
d		Ependymoma
e		Meningioma
A 30-year-old woman has progressive hearing loss. A magnetic resonance imaging (MRI) reveals bilateral acoustic schwannomas (neuromas). Which of the following is the most likely diagnosis?		
a		Type 1 neurofibromatosis (von Recklinghausen disease)
b	*	Type 2 neurofibromatosis
c		Meningeal carcinomatosis
d		Multifocal meningiomas
e		Disseminated ependymomas
People with traumatic head injury are highly susceptible to subsequent impaired sense of smell. The olfactory cortex in humans is located in which of the following locations?		
a		Anterior perforated substance
b	*	Lateral olfactory gyrus (prepiriform area)
c		Posterior third of the first temporal gyrus
d		Angular gyrus
e		Calcarine cortex
The hypogonadism and anosmia of Kallmann syndrome usually attract medical attention during which stage of life?		
a		The newborn period
b		Infancy
c		Childhood
d	*	Adolescence
e		Adult life
A 22-year-old woman is involved in a head-on motor vehicle accident. She was not wearing a seat belt, and she received a skull fracture when her head hit the windshield. By what mechanism would this patient develop anosmia?		
a		Subarachnoid blood causes pial adhesions on the olfactory nerve
b		Injury to the temporal tip injures the olfactory cortex
c		Torsion on the brainstem injures trigeminal tracts
d	*	Shearing forces sever filaments of the receptor cells as they cross the cribriform plate
e		Traction on the chorda tympani damages fibers as they course through the skull
A 45-year-old man has noticed over the past 6 months that his sense of smell is not as sensitive as it used to be. On examination he has unilateral anosmia, ipsilateral optic atrophy, and contralateral papilledema. Which of the following is the most likely diagnosis?		
a		Pseudotumor cerebri
b		Multiple sclerosis (MS)
c	*	Olfactory groove meningioma
d		Craniopharyngioma
e		Nasopharyngeal carcinoma
A 60-year-old woman has intermittent dizzy spells during the day. Her symptoms are worse when she turns her head to the left, to the point that she tends to keep her head stiff, looking forward. She becomes particularly dizzy when she lies down in bed at night or turns onto her left side. She occasionally wakes up in the middle of the night feeling dizzy. She had a similar experience 2 years ago, which lasted for 2 weeks and then		

spontaneously resolved. She has otherwise felt well, and her hearing is normal. On examination, putting her head back and the left ear down elicits a feeling of dizziness and nausea associated with rotatory nystagmus, which lasts for 15 seconds and then resolves. Choose the condition that best matches the clinical scenario.		
a		Ménière disease
b		Cholesteatoma
c		Vestibular schwannoma
d	*	Benign positional vertigo (BPV)
e		Aminoglycoside toxicity
A 34-year-old investment banker has intermittent episodes of vertigo associated with a feeling of fullness in his right ear. These last for several hours. He has had progressive hearing loss in the right ear. There are no other symptoms. He takes no medications and has no history of head trauma. Choose the condition that best matches the clinical scenario.		
a	*	Ménière disease
b		Cholesteatoma
c		Vestibular schwannoma
d		Benign positional vertigo (BPV)
e		Aminoglycoside toxicity
A 47-year-old woman with a history of orthotopic heart transplantation 6 months ago has had a complicated postoperative course and was readmitted 3 months ago with pneumonia. She was treated with gentamicin, vancomycin, and clindamycin, as well as her usual regimen of immunosuppressant medications, lipid-lowering drugs, and aspirin. Since then, she has had severe but stable disequilibrium, with inability to walk without a cane. There has been no hearing loss or weakness. Choose the condition that best matches the clinical scenario.		
a		Ménière disease
b		Cholesteatoma
c		Vestibular schwannoma
d		Benign positional vertigo (BPV)
e	*	Aminoglycoside toxicity
A 72-year-old man awakens with severe vertigo associated with nausea and vomiting. He is ataxic. Over the next several days, he develops numbness of the left side of his body, dysphagia, and hiccups. On examination, he has a left homonymous hemianopsia, left-sided sensory loss, dysmetria with the right hand, and no weakness. He has had intermittent episodes of dizziness for the past month. Choose the condition that best matches the clinical scenario.		
a		Ménière disease
b		Cholesteatoma
c		Vestibular schwannoma
d		Posttraumatic vertigo
e	*	Vertebral artery occlusion
A 57-year-old woman began having weakness and trouble walking 1 year ago. Current examination findings include weak, wasted muscles with spasticity, fasciculations, extensor plantar responses, and hyperreflexia. Which of the following is the most likely diagnosis?		
a		Dorsal spinal root disease
b		Ventral spinal root disease
c		Arcuate fasciculus damage
d	*	Motor neuron disease
e		Purkinje cell damage
Which of the following is the most likely spinal cord pathology evident on this T1-weighted magnetic resonance image (MRI)?		
a		Neoplasia
b	*	Syrinx
c		Infarction
d		Hemorrhage
e		Abscess
A 35-year-old woman falls 12 feet from a ladder and fractures her c-spine, causing damage at the C4 level. She		

is initially a flaccid quadriplegic with areflexia. This areflexia and flaccidity usually evolve into hyper-reflexia and spasticity within which of the following time periods?		
a		2-to-4 months
b		1-to-2 months
c	*	3 days-to-3 weeks
d		1-to-3 hours
e		5-to-25 minutes
After biopsy resection of a lymph node in her neck, a 23-year-old woman notices instability of her shoulder. Neurological examination reveals winging of the scapula on the side of the surgery. During surgery, she probably suffered damage to which of the following?		
a		Deltoid muscle
b	*	Long thoracic nerve
c		Serratus anterior muscle
d		Suprascapular nerve
e		Axillary nerve
A 25-year-old woman is involved in a motor vehicle accident. Among her injuries is a lumbar vertebral body fracture. Which of the following most likely contributed to this injury?		
a	*	Flexion
b		Extension
c		Torsion
d		Spondylolisthesis
e		Subluxation
A 35-year-old man injured his thoracic spine in a motor vehicle accident 2 years ago. Initially he had a bilateral spastic paraparesis and urinary urgency, but this has improved. He still has pain and thermal sensation loss on part of his left body and proprioception loss in his right foot. There is still a paralysis of the right lower extremity as well. This patient most likely has which of the following spinal cord conditions?		
a	*	Brown-Séquard (hemisection) syndrome
b		Complete transection
c		Posterior column syndrome
d		Syringomyelic syndrome
e		Tabetic syndrome
A 19-year-old man injured his cervical spine in a swimming pool diving accident. After an initial severe quadriparesis, there was a rapid recovery of much motor function over several weeks. Which of the following would you expect to find in this patient 12 months from now?		
a		Fasciculations
b		Fibrillations
c		Flaccid paralysis
d		Hyporeflexia
e	*	Spastic paralysis
A 92-year-old woman with known cervical stenosis has poor balance. The examination finding of impaired joint proprioception is due to dysfunction of neurons which decussate at what level?		
a	*	At the medulla
b		At the midbrain
c		At the pons
d		At the thalamus
e		Within one or two levels after entering the spinal cord
An 82-year-old woman with bilateral leg weakness has a greatly dilated abdominal aorta with a normal thoracic aorta. Which of the following is the most likely cause of this damage?		
a		Syphilis
b		Trauma
c		Chronic hypertension
d		Diabetes mellitus
e	*	Atherosclerosis

A 61-year-old man, who smokes five packs of cigarettes per day and has hypertension, had an abdominal aortic aneurysm repair 8 hours ago. The surgery went very well, and there were no reported perioperative complications. Now the patient is unable to move his legs and states that they are "numb." On examination, he has a flaccid paresis of both lower extremities and has impaired pinprick sensation to a T9 level bilaterally. Joint proprioception is normal. Which of the following is the most likely diagnosis in this case?		
a		Cerebral stroke
b		Conversion disorder
c		Multiple sclerosis (MS)
d		Spinal cord compression
e	*	Spinal cord infarct
A 62-year-old man has been diagnosed with an abdominal aortic aneurysm. He is told that he is at high risk for aneurysm rupture, which would almost certainly kill him. Although a surgical procedure could dramatically reduce this risk, the operation itself has risks, including postoperative paraplegia. The arteria radicularis magna (artery of Adamkiewicz) enters at approximately what level?		
a		C2 to C5
b		C5 to C8
c		T2 to T8
d	*	T10 to L1
e		L4 to S4
In a 56-year-old patient with a thoracic spinal cord hemisection, where would you expect the pain and temperature abnormalities to begin?		
a		Exactly at the level of the lesion
b		Four or five segments above the lesion
c		Four or five segments below the lesion
d		One or two segments above the lesion
e	*	One or two segments below the lesion
The periumbilical area is innervated by which sensory dermatome?		
a		C6
b		T2
c		T5
d	*	T10
e		S3
A 65-year-old man has had disrupted cerebrospinal fluid flow for several years, secondary to a thoracic disk herniation. This abnormal physiologic state has resulted in the formation of a cervical cystic lesion readily apparent on MRI. Examination of this patient might reveal which of the following abnormalities?		
a		Third-nerve palsy
b		Calf atrophy
c		Charcot joints
d	*	Atrophy of the intrinsic hand muscles
e		Grasp reflexes
A 36-year-old man is being evaluated for left-hand weakness. On examination, it is readily apparent that he has atrophy of the first dorsal interosseous muscle. This may indicate damage to which of the following spinal roots?		
a		C5 and C6
b		C6 and C7
c		C7 and C8
d	*	C8 and T1
e		T1 and T2
A 39-year-old woman was involved in a head-on collision at approximately 40 miles per hour. She was wearing her seat belt, but still sustained a cervical cord injury from hyperflexion and extension. A cervical syrinx is most likely to evolve in this patient if there has been which of the following?		
a		Intraspinal hyperthermia
b		Intraspinal hypothermia

c		Intraspinal transient ischemia
d	*	Intraspinal contusion
e		Intraspinal demyelination
A 19-year-old man goes swimming in an inland pond in Puerto Rico. Within a few days, he notices itching of his skin over several surfaces of his body. He is unconcerned until several weeks later when he develops lancinating pains extending down his legs and all of his toes. Over the course of just a few days, he develops paraparesis and problems with bladder and bowel control. Within 1 week, he is unable to stand and has severe urinary retention. Which of the following is the most appropriate plan of action on an emergency basis?		
a		Initiate anticoagulation
b		Perform sensory-evoked potential testing
c	*	Order an MRI scan
d		Place a cervical collar
e		Perform spinal angiography
A myelogram is performed on a patient with a subacute, worsening paraparesis. The cerebrospinal fluid (CSF) and myelogram are both unremarkable except for a slight increase in the CSF protein content. A computed tomography (CT) scan of the spine is unrevealing. Plain films of the spine are completely normal. An MRI of the lumbar cord with gadolinium reveals patchy enhancement at about the L4-5 spinal cord level. Based on this information, which of the following is the most likely diagnosis?		
a		An intraspinal hemorrhage
b		An extraparenchymal meningioma
c		An intraparenchymal ependymoma
d	*	A transverse myelitis
e		A syringomyelia
A 26-year-old recent immigrant from Brazil presents to the hospital with a subacute, worsening paraparesis. The patient had worked in the lumbar industry deep in the Amazon jungle. MRI of the spinal cord is abnormal, and a biopsy reveals widespread granulomas. In the midst of one granuloma is an ovoid mass with a spine extending from one side. The pathologist interprets this as a parasitic ovum. If the pathologist is correct, which of the following is the most likely cause of the lesion?		
a		Taenia solium
b		Entamoeba histolytica
c	*	Schistosoma mansoni
d		Schistosoma japonicum
e		Treponema pallidum
A 72-year-old man describes pain about the waist at the level of the umbilicus. The pain is often burning and occasionally shooting. It does not extend down his legs, but he has noticed some weakness in his legs at the time of the pain. With exertion, such as walking, he develops pain in his legs and a tingling sensation in his feet. He has been taking aspirin for the discomfort, but has noticed no substantial change in the sensation. X-rays of his spine reveal no abnormalities. Pain and weakness have become increasingly frequent over the course of several months. Because the man has had urinary hesitancy and frequency in association with an enlarged prostate, he is advised to have a transurethral prostatectomy. A general anesthetic is given for the surgery. On recovering consciousness postoperatively, the man cannot move his legs and has persistent pain at the level of the umbilicus. His plantar responses are bilaterally extensor. Which of the following is the most appropriate emergency evaluation for this patient?		
a		Voiding cystometrogram
b		Electroencephalogram (EEG)
c		Somatosensory evoked potentials (SSEPs)
d	*	Aortogram
e		Penile-brachial index (PBI)
A 55-year-old man with hypertension and diabetes has a pure motor hemiparesis caused by a right thalamic stroke. The fiber tract affected by this syndrome decussates at what level?		
a	*	At the junction of the medulla and the spinal cord
B		At the junction of the midbrain and the medulla
c		At the junction of the pons and the medulla

d		At the thalamus
e		Within one or two levels after entering the spinal cord
Physical examination of a patient who has had a spinal cord infarct reveals preservation of some sensation in the feet. Which of the following would be the most intact modality?		
a	*	Joint proprioception
b		Pain
c		Temperature
d		Two-point discrimination
e		Graphesthesia
A 67-year-old man who has smoked heavily for 45 years describes that with exertion, such as walking, he develops pain in his legs and a tingling sensation in his feet. X-rays of his spine reveal no abnormalities. Pain and weakness have become increasingly frequent over the course of several months. The pain and weakness described by the patient with exertion is probably a manifestation of which of the following?		
a		Myotonia
b		Myokymia
c	*	Spinal claudication
d		Spondylolisthesis
e		Spondylolysis
A 67-year-old diabetic man underwent repair of an abdominal aortic dissection. The procedure seemed to go well; however, the patient awoke with an upper motor neuron pattern of weakness in both of his lower extremities. Sensation for light touch and joint proprioception were relatively preserved. The CSF analysis associated with this patient's condition is which of the following?		
a		An increase in the CSF gamma globulin content
b		A depressed CSF glucose content
c	*	A protein content of greater than 45 mg/dL
d		More than 100 white blood cells (WBCs) per μL
e		More than 100 red blood cells (RBCs) per μL
A patient with a spastic paraparesis has an obvious aortic aneurysm discovered on aortography. The vascular surgeon consulting on the case recommends a bypass procedure. Preoperatively, the patient showed substantial recovery of leg strength and sensation, despite the persistence of bilateral Babinski (plantar extensor) signs. The patient undergoes the surgery and is paraplegic postoperatively with dense loss of sensation of pain and temperature below the level of TA follow-up aortogram would be expected to reveal which of the following?		
a		Complete occlusion of the bypass graft
b		Complete occlusion of the hypogastric artery
c		Complete occlusion of the aorta below the tenth thoracic vertebra
d	*	No flow through the artery of Adamkiewicz
e		No flow through the external iliac artery
A 32-year-old man living along the coast of Massachusetts presents with an acutely evolving left facial weakness. Although he has no facial pain or numbness, he does have a diffuse headache. He has no history of diabetes mellitus or other systemic illnesses, but he does report newly appearing joint pains and a transient rash on his right leg that cleared spontaneously more than 1 month prior to the appearance of the facial weakness. On examination, he has mild neck stiffness and pain on hip flexion of the extended leg. This man is at highest risk for which of the following causes of a unilateral facial weakness?		
a		Human immunodeficiency virus (HIV)-associated neuropathy
b	*	Lyme neuropathy
c		Diphtheritic polyneuropathy
d		Tuberculous meningitis
e		Schwannoma
A 62-year-old man is being treated for tuberculous meningitis with isoniazid and rifampin. To avoid additional signs of neuropathy, which of the following agents should be administered along with these antibiotics?		
a		Ceftriaxone
b		Thiamine
c		Erythromycin

d		Vitamin B_{12}
e	*	Pyridoxine
A patient with a meningitis and facial weakness of unknown etiology had been given isoniazid and rifampin. There was no improvement, and she is treated with high-dose steroids. Within 1 week of the introduction of prednisone, she develops pain radiating down the back of her right leg and has difficulty dorsiflexing the right foot. This new symptom most likely represents which of the following disorders?		
a	*	Borrelia radiculopathy
b		Diabetic mononeuritis multiplex
c		Isoniazid neuropathy
d		Rifampin toxicity
e		Tuberculous radiculopathy
A 12-year-old boy with Lyme disease and bilateral facial weakness is being treated with a cephalosporin. The child's facial strength improves, but he notices twitching of the left corner of his mouth whenever he blinks his eye. This involuntary movement disorder is probably an indication of which of the following?		
a		Sarcoidosis
b		Recurrent meningitis
c	*	Aberrant nerve regeneration
d		Mononeuritis multiplex
e		Cranial nerve amyotrophic lateral sclerosis (ALS)
A 25-year-old woman is being examined by her physician. The knee jerk is being tested. The patellar tendon reflex involves sensory fibers of the femoral nerve that originate in which of the following spinal segments?		
a		S3 to S4
b		S2 to S3
c		S1 to S2
d		L4 to L5
e	*	L2 to L3
A 51-year-old factory worker has noticed progressive weakness over the past year. Examination and testing reveal a painless largely motor peripheral neuropathy. Which of the following agents is most likely to be etiologic in this case?		
a	*	Lead
b		Manganese
c		Thallium
d		Cyanide
e		Mercury
A 29-year-old woman presents with weakness in several muscles in different limbs. The pattern is lower motor neuron and does not fit with any particular peripheral, plexus, or root localization. Which of the following is the most common cause of mononeuropathy multiplex?		
a	*	Diabetes mellitus
b		Temporal arteritis
c		Sarcoidosis
d		Systemic lupus erythematosus
e		Periarteritis nodosa
A very thin elderly woman is having left-sided neck pain. Her family physician attempted to give her a deep intramuscular injection of steroids. She then developed an acute pain radiating down her arm and a subsequent wristdrop. Which of the following is the probable site of injection?		
a	*	Posterior cord of the brachial plexus
b		Medial cord of the brachial plexus
c		Lateral cord of the brachial plexus
d		T1 spinal root
e		C5 spinal root
A 17-year-old woman has weakness of left shoulder abduction and elbow flexion, with good strength in hand and forearm muscles. Which of the following is most likely to cause an injury limited to the upper brachial plexus?		

a		Node dissections in the axilla
b		Pancoast tumor
c	*	Birth trauma
d		Dislocation of the head of the humerus
e		Aneurysm of the subclavian artery
The most prominent areas of degeneration with Friedreich disease are in which of the following areas?		
a		Cerebellar cortex
b		Inferior olivary nuclei
c		Anterior horns of the spinal cord
d	*	Spinocerebellar tracts
e		Spinothalamic tracts
A 20-year-old ataxic woman with a family history of Friedreich disease develops polyuria and excessive thirst over the course of a few weeks. She notices that she becomes fatigued easily and has intermittently blurred vision. Which of the following is the most likely explanation for her symptoms?		
a		Inappropriate antidiuretic hormone
b	*	Diabetes mellitus
c		Panhypopituitarism
d		Progressive adrenal insufficiency
e		Hypothyroidism
A 27-year-old, right-handed man has 1 week of progressive ascending weakness. Examination confirms a lower motor neuron pattern, and cerebrospinal fluid (CSF) protein is elevated. In retrospect, the weakness was preceded by a severe episode of diarrhea. Which of the following is the most frequent preceding infection before the onset of Guillain-Barré syndrome?		
a		HIV
b		Cytomegalovirus (CMV)
c		Chlamydia psittaci
d		Mycoplasma pneumoniae
e	*	Campylobacter jejuni
Friedreich disease has been consistently linked to a defect on which of the following chromosomes?		
a		Chromosome 21
b	*	Chromosome 9
c		Chromosome 6
d		The Y chromosome
e		The X chromosome
A young couple comes to your office because of a family history of Friedreich ataxia. They are in the process of family planning and have several questions regarding the disease. If a patient with Friedreich ataxia has children, at what stage of life would a child be expected to become symptomatic if the disease was inherited?		
a		Neonatal period
b	*	Juvenile period
c		Early adulthood
d		Middle age
e		Senescence
A 17-year-old man presents with 10 days of progressive tingling paresthesias of the hands and feet followed by evolution of weakness of the legs two evenings before admission. He now has back pain. He has a history of a diarrheal illness 2 weeks prior. On examination, he has moderate leg and mild arm weakness, but respiratory function is normal. There is mild sensory loss in the feet. He is areflexic. Mental status is normal. Spinal fluid analysis in this case is most likely to show which of the following?		
a		No abnormalities
b	*	Elevated protein level
c		Elevated white blood cell (WBC) count
d		Elevated pressure
e		Oligoclonal bands
The peripheral neuropathy that would be expected to be seen in a patient with Friedreich disease develops in		

part because of degeneration in which of the following?		
a	*	Dorsal root ganglia
b		Spinocerebellar tracts
c		Anterior horn cells
d		Clarke column
e		Posterior columns
A 23-year-old woman develops progressive weakness of the extremities over the course of 1 week. She has further evolution of weakness involving muscles of the arms, face, and respiration. Eventually, she is intubated and placed in the intensive care unit. Nerve conduction and electromyogram (EMG) studies show widespread peripheral demyelination. Therapy with which of the following may help to speed recovery?		
a		Corticosteroids
b		Cyclophosphamide
c	*	Plasma exchange
d		Albumin infusions
e		3,4-Diaminopyridine
A 26-year-old woman develops acute onset of left shoulder pain. Over the following week, she develops weakness in the proximal left arm and mild sensory loss. On examination, she has scapular winging and marked weakness of the left deltoid, biceps, and triceps muscles. The right side is normal, as are her legs. Mild sensory loss in the upper arm is found. She has lost her biceps and triceps reflexes. Her brother recently had a similar problem. Match clinical scenario with the most likely diagnosis.		
a		Charcot-Marie-Tooth disease
b		Fabry disease
c		Riley-Day disease (familial dysautonomia)
d	*	Parsonage-Turner syndrome (brachial plexopathy)
e		Meralgia paresthetica
A 4-year-old Jewish child has a history of poor sucking at birth, as well as multiple respiratory infections during childhood. He is of short stature and has not been able to eat due to progressive vomiting. On examination, strength is normal, but he is hyporeflexic. There is sensory disassociation, with loss of pain and temperature sensation and preservation of tactile and vibratory sense. The corneas are ulcerated, pupils do not react, and he has orthostatic hypotension. Match clinical scenario with the most likely diagnosis.		
a		Charcot-Marie-Tooth disease
b		Fabry disease
c	*	Riley-Day disease (familial dysautonomia)
d		Parsonage-Turner syndrome (brachial plexopathy)
e		Meralgia paresthetica
A 56-year-old woman has slowly worsening numbness and paresthesias of the hands and feet, as well as proximal muscle weakness. Bulbar muscles are normal. An EMG shows multifocal conduction block, slowing of nerve conduction, and minimal loss of amplitude of muscle action potentials. CSF examination shows an elevation in protein to 260, but no increase in the number of cells. Match clinical scenario with the most likely diagnosis.		
a		Charcot-Marie-Tooth disease
b		Fabry disease
c	*	Chronic inflammatory demyelinating polyneuropathy (CIDP)
d		Acute intermittent porphyria
e		Reflex sympathetic dystrophy
A 40-year-old police officer is given pain medications after a femoral fracture. One week later, he presents with confusion, psychosis, abdominal pain, and vomiting. On examination, he is tachycardic, hypertensive, and febrile. He appears delirious. His arms are weak, sensation is relatively preserved, and he is areflexic. His wife relates that he had similar episodes before, when he was in the military. Match clinical scenario with the most likely diagnosis.		
a		Charcot-Marie-Tooth disease
b		Fabry disease
c		Chronic inflammatory demyelinating polyneuropathy (CIDP)

d	*	Acute intermittent porphyria
e		Reflex sympathetic dystrophy
A 49-year-old dentist has a pins-and-needles sensation in her feet developing over the course of 3 months. Results of her serum chemistries, blood count, and urinalysis are all normal, but her hematocrit is at the lower limit of normal. She has a positive Lhermitte sign (electrical pain down the back on flexion of the neck). EMG and nerve conduction studies reveal slowed conduction in her sensory nerves. There is no family history of similar problems. For clinical scenario, select the most likely condition.		
a		Diabetes mellitus
b		Sarcoidosis
c	*	Nitrous oxide poisoning
d		Gout
e		Amyloid
A 25-year-old woman with a prior history of visual loss in the left eye and a spastic gait develops impaired pain and temperature perception in her feet. She was diagnosed with multiple sclerosis (MS) shortly after her visual loss. Her left fundus reveals optic atrophy, and her facial movements are asymmetric. Chest x-ray reveals large hilar lymph nodes. Mammogram reveals no apparent carcinoma. For clinical scenario, select the most likely condition.		
a		Diabetes mellitus
b	*	Sarcoidosis
c		Thiamine deficiency
d		Pyridoxine deficiency
e		Friedreich disease
A 41-year-old homeless man has a severe burning sensation in his feet. Vibration, position, pain, and temperature senses are all impaired in both of his lower extremities up to the level of the midcalf. He admits to drinking 1 pt of vodka daily. He was operated on in the past for bleeding from esophageal varices. For clinical scenario, select the most likely condition.		
a		Diabetes mellitus
b		Sarcoidosis
c	*	Thiamine deficiency
d		Pyridoxine deficiency
e		Friedreich disease
A 55-year-old alcoholic man is brought in to the emergency room in a confused but nonagitated state. Significant examination findings include ophthalmoparesis, nystagmus, and ataxia. Emergency administration of which of the following medications is appropriate in the treatment?		
a		Glucose
b		Magnesium sulfate
c		Pyridoxine
d		Cyanocobalamin
e	*	Thiamine
A 66-year-old woman presents with weakness worsening over the past 3 hours. The weakness began in her face, but now involves most of her body. She had made her own jam several months before and tasted a sample of it early this morning prior to discarding it because it smelled rancid. On further electrophysiologic testing, which of the following abnormalities would be most characteristic of this patient's illness?		
a		Abnormal visual evoked responses (VERs)
b		Abnormal brainstem auditory evoked potentials
c	*	Posttetanic potentiation of the compound muscle action potential
d		Conduction block
e		Fibrillation potentials
A 6-month-old child is brought to the emergency room after having a generalized seizure at home. She is found to have a temperature of 5°F (16°C). Which of the following correctly reflects why this patient should be investigated with a spinal tap?		
a		All febrile seizures justify spinal taps
b		Most febrile seizures are due to bacterial infections

c		Febrile seizures cause increased intracranial pressure that must be relieved by withdrawing cerebrospinal fluid (CSF)
d		Intrathecal antiepileptics must be given
e	*	Children this age may have meningitis with no manifestations other than fever and seizures
A 17-year-old girl presents with subacute mental status change and left arm weakness. She had a viral illness 1 week ago, and now a diagnosis of acute disseminated encephalomyelitis (ADEM) is made. ADEM is a white matter disease that is distinguishable from multiple sclerosis (MS) by its being which of the following?		
a	*	Monophasic
b		Rapidly lethal
c		Associated with brainstem and spinal cord disease
d		Associated with magnetic resonance imaging (MRI) lesions, which may resolve
e		Associated with inflammatory changes in the brain
A 26-year-old woman with low back pain is seen in the clinic. She states that her pain began acutely 2 weeks ago while lifting a couch. An MRI was performed in the emergency room and she was told that she has a "slipped disk" and sent home. The patient wants to know why surgery was not done immediately to correct the problem. Acute herniation of an intervertebral disk will require emergency surgery in which of the following circumstances?		
a		The disk is laterally herniated at C
b		The disk is causing radicular pain
c	*	The cauda equina is being crushed
d		A thoracic disk is involved
e		The filum terminale is displaced
A 57-year-old man has been having nightly, unilateral, throbbing headaches. They have been occurring daily for the past week. The patient recalls having had a similar headache 5 years ago that lasted for several weeks. The patient has noticed that the headache is associated with lacrimation and a "stuffy nose." Ergotamine prophylaxis has been partially successful. Which of the following is the most effective means of aborting this type of headache?		
a	*	Inhaled 100% oxygen
b		Sublingual nitroglycerin
c		Oral methysergide
d		Oral propranolol
e		Dihydroergotamine suppository
A 32-year-old woman with alcoholism and cocaine use dating back at least 10 years comes to the emergency room after 48 hours of recurrent vomiting and hematemesis. She reports abdominal discomfort that preceded the vomiting by a few days. For at least 36 hours, she has been unable to keep ethanol in her stomach. Intravenous fluid replacement is started while she is being transported to the emergency room, and while in the emergency room she describes progressive blurring of vision. Over the course of 1 hour, she becomes increasingly disoriented, ataxic, and dysarthric. Which of the following is the most likely explanation for her rapid deterioration?		
a		Dehydration
b		Hypomagnesemia
c	*	Wernicke encephalopathy
d		Hypoglycemia
e		Cocaine overdose
A 27-year-old man undergoes general anesthesia for a hernia repair. As the anesthesia begins, his jaw muscles tense and he becomes generally rigid. He becomes febrile, tachycardic, and tachypneic. Intravenous administration of which of the following agents may be lifesaving?		
a		Suxamethonium
b		Nitrous oxide
c		Succinylcholine
d	*	Dantrolene
e		Phenobarbital
A 57-year-old woman with a history of diabetes mellitus and hyper-thyroidism presents to the emergency room		

with a history of 2 days of vertical and horizontal diplopia. There is moderate orbital pain. On examination, her left eye is deviated downward and outward. It can be passively moved medially and upward. The pupils both react normally. Which of the following is the most likely etiology of her diplopia?		
a		Hyperthyroidism
b	*	Diabetes mellitus
c		Cerebral aneurysm
d		Orbital pseudotumor
e		Orbital infection
A 33-year-old operating room nurse accidentally has blood splashed in her eyes during a procedure. The surgical resident who examines her immediately afterward notices that she has 2-mm anisocoria and sends her to the emergency room. She feels well, is alert and talkative, and has no motor dysfunction. On examination, the emergency room physician recognizes that the iris of the eye with the smaller pupil is pale blue, whereas that of the other eye is brown. Which of the following is the most likely etiology of the woman's anisocoria?		
a		Conjunctivitis
b		Traumatic third-nerve palsy
c		Carotid artery dissection
d		Pupillary sphincter injury
e	*	Congenital
A 26-year-old man is brought into the emergency room after a motorcycle accident in which he was not wearing a helmet. The computed tomography (CT) scan shows bifrontal hemorrhagic contusions. The Glasgow Coma Scale (GCS) score is He has no verbal response, opens his eyes to painful stimulation only, and shows a flexion response to pinch of the extremities. Which of the following is the most appropriate classification of this patient's head injury?		
a		Minimal
b		Mild
c		Moderate
d	*	Severe
e		Vegetative
Two days after a motor vehicle accident, you are examining a 19-year-old right-handed man. He has a severe headache and "raccoon eyes." The presence of periorbital ecchymosis in a patient with traumatic head injury should be considered a sign of which of the following?		
a		Subdural hemorrhage
b		Parenchymal hematoma
c		Ocular injury
d		Retinal detachment
e	*	Basilar skull fracture
MRI scan of a 19-year-old woman after a motor vehicle accident shows multiple foci of punctate hemorrhage. These are most likely indicative of which of the following?		
a	*	Diffuse axonal injury
b		Uncontrolled hypertension
c		Amyloid angiopathy
d		Ischemic infarction
e		Coagulopathy
Which of the following treatments should be recommended to improve the outcome of a patient with a severe traumatic head injury?		
a		Corticosteroids
b		Prophylactic hyperventilation
c		Hyperthermia
d	*	Hypothermia
e		Prophylactic anticonvulsants
A 47-year-old woman begins to have difficulty swallowing food at dinner. Over the following 3 hours, she develops diplopia, dysarthria, and ultimately anarthria. She has a history of hypothyroidism and is on thyroid hormone replacement. There is no history of exposure to ticks or recent travel. On examination, she nods her		

head appropriately to questions, and she can write. Forced vital capacity is 500 mL, and she is intubated. She is afebrile, tachycardic, and normotensive. Bilateral ptosis and ophthalmoparesis are present; pupils are 6 mm in diameter and minimally reactive. Facial sensation is intact. Bifacial paresis is present, and the tongue is weak. Extremity muscle bulk and tone are normal, and proximal strength is 4/5 in her arms and legs. Finger and toe movements are rapid and symmetric. Plantar responses are flexor. Blood tests are normal. Motor nerve conduction studies (NCS) show low-amplitude compound muscle action potentials with normal velocities. Sensory nerve action potentials are normal. Which of the following organisms is most likely responsible for this woman's syndrome?		
a		Cytomegalovirus (CMV)
b		Treponema pallidum
c		Chlamydia pneumoniae
d	*	Clostridium botulinum
e		Campylobacter jejuni
A 66-year-old woman presents with fever and a generalized convulsion. MRI shows high T2 signal in the medial temporal lobes (R > L). Lumbar puncture is performed and routine CSF analysis indicates 100 lymphocytes/μL, 15 red blood cells (RBCs), xanthochromia, and a mildly elevated pressure. Which of the following is the most appropriate treatment for this patient?		
a		Dexamethasone
b		Amphotericin B
c		Gamma globulin
d		Methotrexate
e	*	Acyclovir
A 41-year-old right-handed woman has had 1 day of progressive weakness. The symptoms began in her extraocular muscles and then spread quickly to involve other muscles in her face before her entire body felt weak. The history is significant for the recent ingestion of home-canned fruit. The underlying mechanism of this disease is which of the following?		
a		Antibodies to the acetylcholine receptor
b		Antibodies to the calcium receptor
c		Depolarizing blockade of the potassium channel
d	*	Impaired formation of acetylcholine-laden vesicles
e		Toxic muscle necrosis
A 22-year-old woman presents to the emergency room with an episode of acute painful loss of vision in the right eye. On examination, there is a right afferent pupillary defect and papillitis on funduscopic examination. She has no history of neurological symptoms. An MRI shows a few foci of T2 signal increase in a periventricular distribution. Which of the following is the most appropriate treatment for presumed optic neuritis in this patient?		
a		Oral prednisone
b	*	Intravenous methylprednisolone
c		Cyclophosphamide
d		Plasma exchange
e		Intravenous gamma globulin
A previously healthy 23-year-old woman has had 2 weeks of blurry vision in her left eye. Multiple tests, including visual evoked potentials, are performed. The diagnosis of optic neuritis is made. What is the approximate likelihood that this patient will eventually develop MS?		
a		0%
b		5%
c		25%
d		40%
e	*	75%
A 27-year-old man, who 6 months ago had optic neuritis, presents to the emergency room describing a brief, sharp pain radiating into the left side of his face. The vision in his eye has largely recovered, and there is no evidence of sensory loss on the right side of his face. He describes the pain as ice pick–like and grimaces with each attack. He is most likely to have symptomatic relief from his facial pain if he is managed with which of the		

following drugs?		
a		Aspirin
b		Acetaminophen
c		Ibuprofen
d	*	Carbamazepine
e		Codeine
A patient who has been diagnosed with MS has had recurrent episodes of bed wetting (enuresis) over the preceding month. This should decrease with the administration of which of the following drugs?		
a	*	Oxybutynin
b		Phenytoin
c		Carbamazepine
d		Baclofen
e		Methacholine
Over the course of a few months, a patient with MS develops painful spasticity in her left leg that interferes with extension of her leg. The spasticity progresses to the point of interfering with her sleep. Which of the following is the most appropriate treatment for this patient?		
a		Imipramine
b		Phenytoin
c		Carbamazepine
d	*	Baclofen
e		Methacholine
A 47-year-old man arrives at the emergency room in a coma. His wife reports that he developed shaking movements and abnormal breathing sounds in the middle of the night. His shaking and the sounds woke her, but she was unable to wake him. He has been somewhat forgetful over the prior 3 months, but has seemed well otherwise. Examination in the emergency room reveals an unresponsive man who exhibits generalized convulsions every 10 minutes. He is afebrile and incontinent of urine. The physician on call believes the patient is in status epilepticus and should consequently immediately order which of the following?		
a		An intraventricular drain to monitor intracranial pressure
b		Lorazepam for intravenous administration
c	*	Carbamazepine by nasogastric tube
d		Phenytoin by nasogastric tube
e		Gabapentin by nasogastric tube
During the initial treatment of a patient with status epilepticus, a nurse reports that the patient has just lost bladder control and that the urine appears darker than normal. The responsible physician examines the bed sheets and agrees with the nurse's assessment. The physician should immediately institute which measure?		
a		Order placement of an indwelling urinary catheter
b		Order methacholine to regulate bladder emptying
c		Request a surgical consultation in anticipation of an exploratory laparotomy
d	*	Order placement of a condom catheter
e		Request a urologic consultation to assess the incontinence
A 64-year-old man presents to the emergency room with convulsive seizures. A precontrast CT of the brain reveals a hemorrhagic mass in the left frontal lobe, but there is little apparent shift of brain structures and no ventricular enlargement. Two hours after the patient's seizures have stopped, his blood pressure is still elevated at 180/100 mm Hg, and his pulse is slow at 50 beats per minute. Although the patient is still unconscious, he appears to have decreased tone on the right side of his body. The physician should request which of the following interventions?		
a		Intravenous clonidine to lower the blood pressure
b		Placement of a cardiac pacemaker to manage the bradyarrhythmia
c	*	Neurosurgical consult
d		Placement of a ventriculoperitoneal shunt
e		Intravenous tissue plasminogen activator (TPA)
A 52-year-old woman presented to the emergency room with a new-onset aphasia. A hemorrhagic left frontal mass is apparent on head CT. The neurosurgical consultant decides to explore the site of the hemorrhage and		

evacuate the mass that has collected there. He sends tissue from the margin of the blood clot for a frozen section analysis by the pathologist. The tissue is felt to be Kernohan grade IV astrocytoma. Which of the following postoperative therapies is most reasonable?		
a	*	Cranial radiotherapy
b		Intravenous methotrexate
c		Intravenous fludarabine
d		Intravenous cyclophosphamide
e		Intravenous daunorubicin
A 56-year-old man is brought into the emergency room after having collapsed at work 30 minutes ago. He has no medical history and takes no medications. He is alert and speaking but has no awareness of any deficit. He has a right gaze deviation, dense left face and arm plegia, and mild left leg weakness. When asked to raise his legs, he lifts only the right leg. He has reduced blink to threat from the left side. Which of the following is the most appropriate initial diagnostic step?		
a	*	Head CT
b		Cerebral angiogram
c		C-spine MRI
d		Positron emission tomography scan
e		Skull x-rays
A 63-year-old man presents to the emergency room with a right hemiparesis and nonfluent aphasia that began acutely 45 minutes ago. Blood pressure is 160/80 mm Hg, coagulation studies are normal, and there is no recent history of bleeding. A head CT scan shows no evidence of intracranial hemorrhage. Which of the following is the most appropriate therapy at this point?		
a	*	Intravenous rTPA
b		Intravenous streptokinase
c		Oral aspirin
d		Intravenous heparin
e		Intravenous mannitol
Vasospasm and ischemic stroke are frequent complications of aneurysmal subarachnoid hemorrhage (SAH). Nimodipine, a calcium channel antagonist, has been shown to improve outcomes when administered soon after diagnosis of SAH. What is the most likely mechanism?		
a		Prevention of segmental arterial vasospasm by relaxing arterial smooth muscle
b		Reduced severity of SAH-associated myocardial shock by diminishing cardiac afterload
c	*	Reduction of pathologic calcium influx in ischemic cells, inhibiting apoptosis
d		Vasodilation of the cerebral vasculature facilitating passive perfusion
e		All answers are correct
A 28-year-old woman is found on the floor by a friend. The patient is a known intravenous heroin user. On arrival to the hospital, the patient is obtunded. She receives several doses of naloxone, but her mental status fails to improve. On examination, she is unresponsive except for decorticate posturing in response to noxious stimulation. Brainstem reflexes are intact. Diffusion-weighted magnetic resonance imaging (MRI) is performed 1 week later (Figure). What is the most likely mechanism of this patient's neurologic impairment?		
a		Acute spongiform encephalopathy from heroin inhalation ("chasing the dragon")
b		Bacterial meningitis
c		Bilateral middle cerebral artery infarctions
d		Bilateral watershed infarctions
e	*	Hypoxia
A 64-year-old man collapses in a public place. Emergency medical service (EMS) personnel arrive after approximately 7 minutes, begin cardiopulmonary resuscitation, and apply a defibrillator successfully to treat ventricular fibrillation. Due to the quick EMS response and excellent inpatient care for his cardiac disease, the patient achieves a good recovery. If the patient were to be examined 6 months after the event, what neurologic deficit attributable to the cardiac arrest is most likely to be encountered?		
a		Ataxia
b		Lower extremity spasticity (spastic diplegia)
c		Peripheral large fiber sensory neuropathy

d	*	Short-term memory impairment
e		All answers are correct
A 38-year-old man presentsto the emergency department complaining of an episode of left arm heaviness and clumsiness that lasted for approximately 5 minutes. The patient is no longer concerned about the event. However, he explains that he has not felt well for the past 2 days and stayed awake with chills the night before. He is sure the event was caused by being tired. The neurologic examination is normal. The general examination is notable for a mild heart murmur, which the patient states has been present since childhood, and some scarring on the forearms and antecubital areas. The patient reports no family history of neurologic disease. Based on the information presented, which mechanism of cerebral ischemia appears to be most plausible?		
a	*	Cardioembolism
b		Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL)
c		Cerebral vasculitis
d		Lipohyalinosis
e		Mitochondrial encephalomyopathy lactic acidosis and stroke-like episodes (MELAS)
The patient is diagnosed with infectious endocarditis, and an appropriate antibiotic regimen is started. The next day, he reports that he is experiencing some abnormal difficulty reading the newspaper, which had not been a problem for him 5 minutes prior when he set the paper down to use the bathroom. A second evaluation reveals that he has no problem speaking or understanding speech or writing, but he is unable to read. He also has a right homonymous hemianopia. What is the likely location of his lesion?		
a		Left anterior choroidal territory
b		Left inferolateral frontal lobe
c	*	Left occipital lobe extending to the splenium of the corpus callosum
d		Left superior temporal lobe
e		All answers are incorrect
Several cerebrovascular disease syndromes include cognitive and psychiatric findings. Which of the following conditions does not have cognitive dysfunction as a prominent characteristic?		
a		Behçet’s disease
b		CADASIL
c	*	Fibromuscular dysplasia
d		Lupus cerebritis
e		Primary angiitis of the central nervous system (CNS)
Evaluation by an ophthalmologist reveals a branch retinal artery occlusion. On mental status examination, she shows mild memory impairment and is unable to perform serial 7s. Neurologic examination is significant for decreased hearing bilaterally. She has no family history of similar neurologic problems and no abnormal skin findings. Which of the following diagnoses is most consistent with this patient’s clinical presentation?		
a		CADASIL
b		Giant cell arteritis
c		MELAS
d		Sneddon’s syndrome
e	*	Susac’s syndrome
An MRI of the brain is obtained to provide confirmatory evidence for this patient’s condition. Which of the following findings is most consistent with Susac’s syndrome?		
a		Diffuse white matter hyperintensity on fluid attenuation inversion recovery (FLAIR) images sparing the subcortical U fibers
b	*	Hyperintensity on FLAIR images in the central portion of the corpus callosum
c		Punctate areas of hypointensity on gradient echocardiography images
d		Sulcal hyperintensity on T2 images
e		White matter hyperintensity on FLAIR images predominantly in the occipital lobes
Research on Susac’s syndrome indicates a pathologic role of antiendothelial cell antibodies. Several autoimmune conditions can lead to cerebral infarction. A pathologic self-recognizing antibody has been identified for which of the following presumably autoimmune stroke-causing conditions?		
a		Behçet’s disease

b		Giant cell arteritis
c		Primary angiitis of the CNS
d		Sneddon's syndrome
e	*	Wegener's granulomatosis
A 60-year-old man presents with recent onset of right facial weakness. He cannot lift his right eyebrow or close his right eye. He has a depressed right nasolabial fold. He also reports decreased taste. What is the best treatment?		
a		Aspirin
b		Heparin drip
c	*	Prednisone
d		Intravenous recombinant tissue plasminogen activator (rtPA) if he presents within 4.5 hours of symptom onset
e		All answers are incorrect
What is the most common cause of amaurosis fugax (transient monocular blindness)?		
a		Hypotension
b	*	Ipsilateral internal carotid artery atherosclerosis
c		Migraine
d		Ophthalmic artery vasospasm
e		Temporal arteritis
Which of the following is least likely to be due to a lacunar stroke in a left hemisphere dominant person?		
a		Left-sided weakness involving the face, arm, and leg
b		Left-sided numbness involving the face, arm, and leg
c		Dysarthria and a clumsy left arm
d	*	Left face and arm weakness and left hemineglect
e		All answers are correct
A 42-year-old man presents with ptosis on the left, numbness of his left face and right arm and leg, vomiting, vertigo, and falling to the right. Occlusion of which artery is most likely responsible?		
a	*	Vertebral artery
b		Anterior inferior cerebellar artery
c		Superior cerebellar artery
d		Posterior cerebral artery
e		All answers are incorrect
A stroke in which of these territories causes the lateral pontine syndrome (ipsilateral facial paralysis, unilateral deafness, vertigo, facial hemianesthesia, contralateral loss of pain and temperature, ataxia, and ipsilateral Horner syndrome).		
a	*	Anterior inferior cerebellar artery (AICA)
b		Anterior spinal artery
c		Paramedian branches of the basilar artery
d		Posterior inferior cerebellar artery (PICA)
e		All answers are correct
A 60-year-old man presents with left face and arm weakness. Sensation is normal. What artery is most likely involved?		
a	*	The right recurrent artery of Huebner
b		The right anterior cerebral artery
c		The right lateral lenticulostriate arteries
d		The right anterior choroidal artery
e		All answers are incorrect
A 70-year-old woman presents with a stroke of the medial thalami bilaterally. Where is the lesion?		
a	*	The artery of Percheron
b		Posterior choroidal artery
c		Polar/thalamotuberal artery
d		Thalamogeniculate artery

e		All answers are incorrect
A 55-year-old man taking no medications presents with acute stroke. His oxygen saturation is 96% on room air. Which of the following is false?		
a	*	Supplemental oxygen should be given
b		Cardiac monitoring should be performed for the first 24 hours after the stroke to rule out atrial fibrillation
c		Since there is no history of anticoagulant use, the only blood test required before administration of recombinant tissue plasminogen activator (rtPA), if there is no reason to suspect a bleeding abnormality, is a blood glucose measurement
d		Baseline troponins should not delay administration of rtPA
e		All answers are correct
Which of the following statements is false?		
a	*	If a patient clinically has a transient ischemic attack, the findings on diffusion-weighted imaging (DWI) will be negative
b		Some patients with stroke have negative diffusion-weighted imaging findings
c		Recombinant tissue plasminogen activator (rtPA) can be given to a stroke patient who is improving clinically if the remaining deficit is not minor
d		The guidelines now state that rtPA can be given to patients up to 4.5 hours after the onset of stroke, but there are additional exclusion criteria after 3 hours
e		All answers are correct
A 60-year-old patient presents with stroke. Symptoms began 30 minutes ago. No contraindications to recombinant tissue plasminogen activator are found in the history or laboratory studies. Computed tomography (CT) shows blurring of the gray-white junction involving more than one third of the middle cerebral artery territory. Which of the following is the most appropriate treatment?		
a		Aspirin
b		Clopidogrel
c		Heparin drip
d	*	Recombinant tissue plasminogen activator
e		All answers are correct
Which of the following statements is false?		
a		In addition to being invasive, conventional angiography does not provide good visualization of intramural hematomas
b	*	Intravenous tissue plasminogen activator is contraindicated in cases of stroke from carotid dissection
c		Infection, hypoglycemia, and other metabolic disturbances can reactivate old stroke symptoms
d		Hemiparesis is the most common presentation of acute stroke in children
e		All answers are correct
What is the mechanism of action of recombinant tissue plasminogen activator?		
a	*	It converts plasminogen to plasmin, which initiates fibrinolysis
b		It inhibits platelet cyclooxygenase
c		It inhibits platelet aggregation
d		It is a thrombin inhibitor
e		All answers are correct
A 55-year-old man has a right middle cerebral artery infarct. Thirty six hours after the stroke, he is difficult to arouse. CT shows mass effect and slight midline herniation. Which treatment should be considered?		
a		Corticosteroids
b	*	Hemicraniectomy
c		Hypothermia
d		Suboccipital decompression
e		All answers are incorrect
A patient with hypertension is found to have asymptomatic carotid stenosis. Which of the following is recommended to prevent stroke?		
a		Initiation of aspirin and a statin
b		Self-measured blood pressure at home to try to improve blood pressure measurements

c		A diet that is low in sodium and high in potassium
d	*	All of the above
e		None of the above
A 70-year-old man presents with right middle cerebral artery stroke. Investigations reveal 90% stenosis of his right middle cerebral artery. Which of the following treatments is recommended?		
a	*	Aspirin 325 mg daily
b		Warfarin
c		Angioplasty of the right middle cerebral artery
d		Stenting of the right middle cerebral artery
e		All of the above
A 60-year-old man presents the day after a stroke. A patent foramen ovale (PFO) is found. The rest of his workup is unremarkable. He has never had a deep vein thrombosis. What treatment is recommended?		
a	*	Aspirin
b		PFO closure in 1 month
c		PFO closure as soon as possible
d		Warfarin
e		All of the above
A 40-year-old woman presents with a stroke. She has a history of three spontaneous abortions. Her partial thromboplastin time (PTT) is prolonged. Which of the following tests is most likely to confirm her diagnosis?		
a		Quantitative von Willebrand factor testing
b		Antithrombin III level
c	*	Testing for antiphospholipid antibodies
d		Testing for protein S deficiency
e		None of the above
In which stroke patients may carotid endarterectomy (CEA) be associated with an improved outcome compared with carotid artery stenting (CAS)?		
a	*	Age greater than 70 years
b		Patients with hyperlipidemia
c		Patients with mild diabetes
d		Patients taking aspirin
e		None of the above
Which of the following is least likely to increase the risk for stroke due to atrial fibrillation?		
a		Congestive heart failure
b		Hypertension
c		Diabetes
d	*	Age 60 years
e		All answers are correct
What is an advantage of warfarin compared with other oral anticoagulants such as apixaban and dabigatran?		
a	*	It is reversible with vitamin K and fresh frozen plasma
b		It is shorter acting
c		Less risk for intracranial hemorrhage
d		Less risk for gastrointestinal hemorrhage
e		All answers are incorrect
A 30-year-old woman with a history of migraines presents with stroke. Her father had a history of recurrent strokes beginning at age Her paternal grandmother had early dementia. Magnetic resonance imaging (MRI) shows extensive white matter disease. Which of the following is expected?		
a		Mutation in the GLA gene
b		Mutation in the HTRA1 gene
c		Mutation in the KRIT1 gene
d	*	Mutation in the NOTCH3 gene
e		All answers are correct
A 20-year-old man with a history of intellectual disability and myopia presents with stroke. On examination, he		

is tall and thin. Serum and urine amino acids confirm his diagnosis. A trial of which medication is recommended to treat the underlying condition?		
a		Carnitine
b		Coenzyme Q10
c	*	Pyridoxine
d		Warfarin
e		All answers are incorrect
In a patient with sickle cell disease and high-velocity flow in the middle cerebral artery demonstrated on transcranial Doppler ultrasonography, what is the best method to prevent stroke?		
a		Avoid iron deficiency anemia
b	*	Transfuse the patient to maintain a hemoglobin S concentration at less than 30% of the total hemoglobin concentration
c		Transfuse the patient when symptoms occur
d		Transfuse the patient if symptoms persist after hydration
e		All answers are incorrect
A 58-year-old woman presents with a small subcortical intracerebral hemorrhage. Her blood pressure is 185/ 115 mm Hg. Which of the following is recommended at this time?		
a		Mannitol
b		3% hypertonic saline
c	*	Nicardipine
d		Intravenous fosphenytoin
e		None of the above
A 50-year-old man presents with a lobar intracerebral hemorrhage. Which of the following is *not* recommended?		
a		Screen for a myocardial infarction
b		Screen for dysphagia
c	*	Administer corticosteroids to decrease intracranial pressure
d		Consider continuous electroencephalographic (EEG) monitoring if his mental status is worse than expected
e		All of the above
A 15-year-old boy was struck in the head by a baseball. He briefly lost consciousness when it occurred but then recovered. In the emergency department, he begins to become confused and drowsy and then vomits repeatedly. Which of the following has most likely occurred?		
a		Aneurysmal rupture
b	*	Laceration of the middle meningeal artery
c		Post-traumatic seizure
d		Post-traumatic migraine
e		All answers are incorrect
Which of the following statements is false?		
a		Headgear does not prevent concussion in those playing sports but may help to prevent more serious brain injury
b	*	Loss of consciousness is required to diagnose concussion
c		An athlete with a suspected concussion should be removed from play to prevent additional injury
d		An apparently mild second head injury can be fatal if the patient has not recovered from the first head injury
e		All answers are correct
A boxer who has been knocked out repeatedly develops progressive cognitive decline. He has memory impairment and executive dysfunction. The symptoms began after retirement from the sport. Magnetic resonance imaging (MRI) shows diffuse cerebral atrophy, a cavum septum pellucidum, and thinning of the corpus callosum. What is the most likely diagnosis?		
a		Chronic neurocognitive impairment
b		Chronic postconcussion syndrome
c	*	Chronic traumatic encephalopathy

d		Parkinson disease
e		None of the above
A 24-year-old patient was involved in a motor vehicle accident 5 days ago and is not awakening. Pupils are reactive, and corneal and gag reflexes are present. Withdrawal responses are symmetric. Computed tomography (CT) scans have been negative, and intracranial pressure (ICP) is normal. What is the most likely MRI finding?		
a		A brainstem ischemic stroke
b	*	Microbleeds in the corpus callosum and at the gray-white junction
c		A subdural empyema
d		A subdural hygroma
e		All answers are incorrect
A 25-year-old woman presents with a severe traumatic brain injury due to a motor vehicle accident. Her Glasgow Coma Scale (GCS) score is 7, and her CT scan is abnormal. Which of the following is recommended?		
a		High-dose corticosteroids
b		Erythropoietin
c		Progesterone
d	*	Intracranial pressure monitoring
e		None of the above
In the context of increased ICP and the Monro-Kellie hypothesis, which of the following is usually the most important blood volume regulator?		
a		Arteriolar oxygen
b	*	Arteriolar carbon dioxide
c		Arteriolar lactic acid
d		Venous oxygen
e		All answers are incorrect
Which of the following treatments for elevated ICP is reserved primarily for acute treatment?		
a	*	Hyperventilation
b		Mannitol
c		Hypertonic saline
d		Hypothermia
e		None of the above
Which of the following statements is false?		
a		Post-traumatic epilepsy is a common cause of acquired epilepsy
b	*	Administration of anti-epileptic medications immediately after a traumatic brain injury prevents patients from developing epilepsy later
c		The majority of patients who develop epilepsy from a traumatic brain injury do so within the first 2 years after the injury
d		Prophylactic anti-epileptic medication decreases the risk of early post-traumatic seizures
e		None of the above
Mutism, lack of emotion, and minimal movement may indicate an injury to which region?		
a		Dorsolateral frontal lobe
b		Orbital-frontal region
c	*	Superior mesial frontal lobe
d		Inferior temporal lobe
e		None of the above
A 67-year-old man with a history of prostate cancer presents to the emergency department with lower back pain and leg weakness. MRI shows spinal metastases. What is the first step?		
a	*	Administer high-dose dexamethasone
b		Arrange for spinal radiation therapy
c		Make arrangements for surgery
d		Order a CT myelogram to better define cord impingement
e		None of the above
Which of the following statements is false?		

a		Patients with a traumatic spinal cord injury above the C5 level that is complete should be intubated
b	*	A traumatic spinal cord injury in the upper thoracic spine that is complete typically causes early hypertension and tachycardia
c		A common cause of spinal cord infarction is surgery, such as aortic surgery
d		Cerebrospinal fluid (CSF) drainage is used to treat acute spinal cord infarction
e		None of the above
Which of the following features is not typical of metabolic encephalopathy?		
a	*	Nonreactive pupils
b		Nonfocal neurologic examination
c		Distractibility
d		Waxing and waning alertness
e		None of the above
The electroencephalogram (EEG) finding of 14- and 6- Hz positive spikes is classically associated with which condition?		
a		Benzodiazepine intoxication
b		Cardiac arrest
c		Renal failure
d	*	Reye syndrome
e		None of the above
A 60-year-old man in the intensive care unit (ICU) develops altered mental status and has a brief seizure. He is afebrile. His complete blood count and CSF studies are unremarkable. His complete metabolic profile shows a sodium level of 115 mEq/L. Which of the following is the best treatment?		
a		Intravenous fosphenytoin
b		Intravenous levetiracetam
c		Scheduled intravenous lorazepam
d	*	Sodium correction
e		None of the above
A patient who was admitted to the ICU with a frontal contusion becomes intermittently unresponsive. Laboratory studies are normal, and head CT findings are unchanged. Which of the following is most likely to yield the diagnosis?		
a	*	Continuous EEG monitoring
b		Repeat MRI
c		Magnetic resonance venography (MRV)
d		Computed tomography angiography (CTA)
e		None of the above
A neurosurgical patient develops confusion. Syndrome of inappropriate antidiuretic hormone secretion (SIADH) is suspected. Which of the following is least likely to be present?		
a	*	Sodium level >145 mEq/L
b		Decreased urine output
c		Concentrated urine
d		Hypervolemia
e		None of the above
A patient in the ICU develops hemiballism. Which of the following is the most likely etiology?		
a		Hypoglycemia
b		Hypercalcemia
c		Hypomagnesemia
d	*	Nonketotic hyperglycemia
e		None of the above
A patient presents with leg weakness and areflexia. Electromyography (EMG) shows a demyelinating polyneuropathy. The weakness progresses to the upper extremities after admission. In addition to treating the patient's underlying condition, which of the following is recommended?		
a		Perform a swallow study

b	*	Check forced vital capacity and negative inspiratory force
c		Repeat EMG on the following day to assess for worsening
d		Place a nasogastric tube
e		None of the above
A patient with a history of respiratory failure and sepsis cannot move when the paralytic agent is discontinued. Creatine kinase is elevated. Muscle biopsy shows selective loss of myosin filaments. What is the most likely diagnosis?		
a	*	Critical illness myopathy
b		Critical illness polyneuropathy
c		Hypothyroidism
d		Periodic paralysis
e		None of the above
A 30-year-old man presents with respiratory failure. He is found to have limb-girdle weakness. EMG shows myotonic discharges in the paraspinal muscles. What is the most likely cause?		
a	*	Acid maltase deficiency
b		Myophosphorylase deficiency
c		Mutation in PHOX2B
d		Spinal muscular atrophy type 1 (Werdnig-Hoffman disease)
e		None of the above
Which of the following is a medication that is sometimes used in the treatment of neuroleptic malignant syndrome but should not be given if calcium channel antagonists are being used?		
a		Amantadine
b		Bromocriptine
c	*	Dantrolene
d		l-Dopa
e		None of the above
Which of the following is a medication that should be avoided in patients with neuromuscular disease because of the risk of hyperkalemia?		
a		Atracurium
b	*	Succinylcholine
c		Rocuronium
d		Vecuronium
e		None of the above
Typically, a poor pupillary response and absence of corneal reflexes on day 3 after a cardiac arrest indicates a poor prognosis. In which of the following situations should one wait past day 3 to decide the prognosis?		
a		The patient is less than 50 years old
b	*	The patient was treated with hypothermia
c		The patient’s ejection fraction is less than 10%
d		The patient has pericarditis
e		None of the above
What is Cushing’s triad?		
a		Hypotension, bradycardia, apnea
b		Hypertension, tachycardia, apnea
c		Hypotension, tachycardia, tachypnea
d	*	Hypertension (widened pulse pressure), bradycardia, and irregular respirations
e		None of the above
If a patient has been treated with neuromuscular blocking agents, how can one best determine whether they are affecting the brain death examination?		
a		Check a serum level
b	*	Perform the train-of-four technique with maximal ulnar stimulation
c		Do an EMG
d		Use a painful stimulus

e		None of the above
Which of the following is least helpful as an ancillary test during brain death testing in adults?		
a		Electroencephalography
b		Transcranial Doppler ultrasonography
c		Single-photon emission computed tomography (SPECT) nuclear scan
d	*	Somatosensory evoked potentials (SSEPs)
e		All answers are correct
A 60-year-old man is brought to clinic by his daughter. He has been forgetful and loses objects. She suspects dementia. Which of the following best differentiates mild cognitive impairment from dementia?		
a		Preservation of executive function
b		Preservation of language skills
c		Preservation of visuospatial skills
d	*	Preservation of activities of daily living
e		None of the above
Which of the following is not an early finding in Alzheimer disease (AD)?		
a		Episodic memory loss
b		Rapid forgetting
c		Difficulty managing finances
d	*	Impaired procedural memory
e		None of the above
A college professor is concerned that he may have early AD. What is the most helpful evaluation?		
a		Clinical Dementia Rating scale
b		Mini-Mental State Examination (MMSE)
c		Montreal Cognitive Assessment
d	*	Neuropsychological testing
e		None of the above
A 60-year-old patient with a diagnosis of mild cognitive impairment (MCI) is concerned about progression to AD. Which of the following is not an indicator of more rapid progression from MCI to AD?		
a		Low Abeta42 and high tau in cerebrospinal fluid
b		Carrier of ε4 allele of apolipoprotein E
c	*	Positron emission tomography (PET) shows hypometabolism in the frontal lobes
d		A positive amyloid scan
e		None of the above
What is the greatest risk factor for AD?		
a		Family history of AD
b		Head trauma
c		Socioeconomic status
d	*	Increasing age
e		All answers are incorrect
A 50-year-old man presents with concerns about AD. His mother, maternal aunt, and maternal grandmother were diagnosed with AD. What is the most likely cause?		
a		Mutation in APP
b		Mutation in ApoE4
c	*	Mutation in PSEN1
d		Mutation in PSEN2
e		None of the above
In patients with AD, choline acetyltransferase is decreased in which structure?		
a	*	Basalis nucleus of Meynert
b		Raphe nuclei
c		Nucleus accumbens
d		Locus ceruleus
e		None of the above

Which of the following is not a characteristic pathologic finding in AD?		
a		Synaptic loss
b	*	Alzheimer type II astrocytes
c		Granulovacuolar degeneration
d		Hirano bodies
e		All of the above
Which of the following statements is false?		
a	*	The diagnoses of Alzheimer disease (AD) and vascular cognitive impairment (VCI) are mutually exclusive
b		Depression may contribute to cognitive symptoms in patients who have had a stroke
c		VCI is typically subcortical in nature
d		VCI can occur without memory deficits
e		None of the above
Which of the following is not recommended to prevent vascular cognitive impairment in at-risk individuals?		
a	*	Antioxidants
b		Mediterranean diet
c		Physical activity
d		Treatment of hypertension
e		All of the above
A 60-year-old, usually quiet college professor begins rolling her eyes when asked questions in class and yelling lewd comments at students. In the medical office, her examination is normal, but she is chewing on a pen. Which of the following is most likely her diagnosis?		
a		Alzheimer disease
b		Creutzfeldt-Jakob disease
c	*	Frontotemporal degeneration
d		Progressive supranuclear palsy
e		None of the above
Which of the following is least consistent with behavioral variant frontotemporal degeneration?		
a		Apathy
b		Loss of sympathy
c		Ritualistic behavior
d	*	Visuospatial difficulties
e		None of the above
Mutation in which of the following genes is the most common cause of familial frontotemporal dementia with amyotrophic lateral sclerosis (ALS)?		
a	*	C9ORF72
b		GRN
c		MAPT
d		SOD1
e		None of the above
Which of the following statements is false?		
a	*	Attention difficulties and personality changes occur late in human immunodeficiency virus (HIV)-associated dementia
b		HIV-associated dementia may respond to antiretroviral therapy
c		Patients can develop HIV-associated neurocognitive disorders (HAND) even while receiving antiretroviral therapy
d		Neuropsychological testing is required to diagnose milder forms of HIV-associated neurocognitive disorders
e		None of the above
A patient is brought in by his family because of dementia. The family members report that he has poor attention, forgetfulness, visual hallucinations, depression, falls, and strange behavior in his sleep. On examination, he has facial masking and bradykinesia. There is no tremor. Which disease is the most		

likely cause?		
a		Alzheimer disease
b		Parkinson disease
c	*	Dementia with Lewy bodies
d		Normal pressure hydrocephalus
e		None of the above
A 50-year-old patient presents with rapidly progressive cognitive problems and myoclonic jerks. CreutzfeldtJakob disease is suspected. Which of the following findings is least consistent with this diagnosis?		
a		Elevated cerebrospinal fluid (CSF) tau
b		Elevated CSF neuron-specific enolase
c		Increased signal in the basal ganglia on magnetic resonance imaging (MRI)
d	*	CSF pleocytosis
e		None of the above
Which of the following structures are most likely to be found in chronic traumatic encephalopathy?		
a		Bunina bodies
b		Lewy bodies
c	*	Neurofibrillary tangles
d		Aggregates of ubiquitin
e		None of the above
Which sleep disorder is characteristic of older adults with dementia?		
a		Delayed sleep phase syndrome
b	*	Irregular sleep-wake rhythm disorder
c		Restless leg syndrome
d		Short sleeper
e		None of the above
Which of the following is not recommended for patients with dementia?		
a	*	Brief afternoon naps
b		Music therapy
c		Physical exercise
d		Social engagement
e		All of the above
Which of the following is not recommended to reduce behavioral symptoms in patients with dementia?		
a	*	Gently correct the patient each time the patient is mistaken
b		Avoid changes in routine
c		Avoid disturbing television programs and movies
d		Prevent fatigue
e		All answers are correct
Prior to objective testing with an on-the-road driving test, which of the following is most helpful in deciding whether a patient with dementia can drive safely?		
a	*	The Clinical Dementia Rating Scale
b		The patient thinks it is safe
c		Neuropsychological testing
d		Analysis of processing speed
e		None of the above
A patient taking rivastigmine is having significant vomiting. The family feels that the medication has been beneficial, however. Which of the following drugs is recommended?		
a		Donepezil
b		Galantamine
c		Tacrine
d	*	Transdermal rivastigmine
e		None of the above
What is the mechanism of action for memantine?		

a		AMPA (α-amino-3-hydroxyl-5-methyl-4-isoxazolepropionate) receptor antagonist
b		Cholinesterase inhibitor
c	*	NMDA (N-methyl-d-aspartate) antagonist
d		Reduces glutamate release at the synapse
e		None of the above
A 25-year-old woman presents with eye pain and blurry vision. On examination, she has decreased visual acuity and an afferent pupillary defect. Brain magnetic resonance imaging (MRI) is normal apart from the eye. What is the treatment of choice?		
a	*	Intravenous methylprednisolone followed by an oral prednisone taper
b		Oral prednisone alone
c		Therapeutic lumbar puncture
d		Interferon-beta
e		None of the above
A patient presents with painless vision loss in one eye. He is found to have a centrocecal scotoma in that eye. His mother and brother experienced similar symptoms and eventually lost vision in both eyes. The patient's brain MRI is normal. Methylprednisolone does not improve his symptoms. What is his diagnosis?		
a		Optic neuritis
b	*	Leber hereditary optic neuropathy
c		Myotonic dystrophy type 1
d		Oculopharyngeal muscular dystrophy
e		None of the above
A patient involved in a motor vehicle accident has a brain MRI. Lesions consistent with multiple sclerosis are seen. The patient is asymptomatic from the lesions. What is the patient's diagnosis?		
a		Clinically isolated syndrome
b		Possible multiple sclerosis
c		Probable multiple sclerosis
d	*	Radiographically isolated syndrome
e		None of the above
Which of the following statements is false?		
a		Multiple sclerosis can be diagnosed at the time of presentation of a clinically isolated syndrome (CIS) if the appropriate MRI findings are seen
b		A single MRI scan can demonstrate dissemination in time
c	*	Oligoclonal bands are pathognomonic of multiple sclerosis
d		In a patient with MS, brainstem symptoms at initial presentation suggest a worse prognosis
e		All answers are correct
Which of the following statements about multiple sclerosis (MS) is true?		
a		MS is more common in identical twins than in fraternal twins
b		MS has been linked to a polymorphism in the major histocompatibility class II locus on chromosome 6p
c		Geography affects the risk for MS
d	*	All of the above
e		None of the above
Which of the following is most characteristic of MS?		
a		Complete external ophthalmoplegia
b		Complete third nerve palsy
c	*	Sixth nerve palsy
d		Vertical gaze palsy
e		None of the above
Which of the following is most likely to be seen in a patient with MS?		
a		Diabetes insipidus
b	*	Facial myokymia
c		Livedo reticularis
d		Retinopathy

e		All answers are incorrect
A patient presents with vision impairment, hearing loss, and headache. MRI demonstrates lesions in the middle of the corpus callosum. She also has lacunar infarcts. Branch retinal artery occlusions are seen with retinal fluorescein angiography. What is the most likely diagnosis?		
a		Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL)
b		Multiple sclerosis
c		Neurosarcoidosis
d	*	Susac syndrome
e		None of the above
A patient presents with headache, an abducens palsy, and pyramidal signs. She has a long history of mucosal ulcers and uveitis. What is the most likely diagnosis?		
a	*	Behçet disease
b		Multiple sclerosis
c		Neurosarcoidosis
d		Whipple disease
e		None of the above
Which of the following is most likely to be seen in a patient with MS?		
a		Extrapyramidal signs
b		Myorhythmia
c		All the brain lesions enhance simultaneously
d	*	Open ring sign
e		None of the above
Which of the following is least likely to occur in MS?		
a		Depression
b		Vitamin D deficiency
c		Sexual dysfunction
d	*	Seizures
e		None of the above
Which of the following is most abundant in an active MS plaque?		
a		B cells
b		Neutrophils
c		Eosinophils
d	*	T cells
e		None of the above
Which of the following is the most specific characteristic of an active MS plaque?		
a	*	Macrophages containing myelin debris
b		Astrocytic fibrillary gliosis
c		Almost no oligodendrocytes
d		Sharp margins on gross specimens
e		All answers are incorrect
What are shadow plaques?		
a		MS plaques with significant axon loss
b		Smaller MS plaques adjacent to a larger plaque
c		MS plaques with significant vasogenic edema
d	*	Remyelinating MS plaques
e		All answers are correct
Which of the following is least likely to cause reappearance of prior deficits in a patient with MS?		
a		Exercise
b		Fever
c	*	Pregnancy
d		Urinary tract infection

e		All of the above
A young woman with relapsing remitting multiple sclerosis (RRMS) asks about having a child. Which of the following statements is false?		
a		There is a decrease in the relapse rate during pregnancy
b	*	There is an increased risk for miscarriage in RRMS
c		In most patients with RRMS, there is no increase in delivery complications
d		RRMS does not cause an increase in birth defects
e		All answers are correct
Which treatment for MS is safest during pregnancy?		
a		Fingolimod
b	*	Glatiramer acetate
c		Dalfampridine
d		Natalizumab
e		All of the above
Which medication for MS is pregnancy category X?		
a		Dimethyl fumarate
b		Mitoxantrone
c		Rituximab
d	*	Teriflunomide
e		None of the above
What is the reason for treating an MS exacerbation with methylprednisolone?		
a		Prevention of future MS attacks
b		Delay in the next MS attack
c	*	More rapid improvement of symptoms
d		Reduction in the likelihood of permanent injury from an MS lesion
e		None of the above
Which of the following statements is false?		
a	*	Randomized controlled trials support the use of methylprednisolone to treat acute MS exacerbations in children
b		Intravenous immunoglobulin (IVIG) can be used for acute MS exacerbations in adults if steroids are contraindicated
c		Plasma exchange is a second-line treatment for adults with MS relapses
d		Methylprednisolone can cause gastrointestinal bleeding
e		All answers are correct
Which of the following is the most likely to occur in a patient taking interferon?		
a		Anemia
b	*	Flu-like symptoms
c		Leukopenia
d		Thrombocytopenia
e		None of the above
Which of the following medications is contraindicated in patients with poor kidney function (i.e., a low glomerular filtration rate)?		
a	*	Dalfampridine
b		Fingolimod
c		Natalizumab
d		Teriflunomide
e		All answers are correct
Which of the following medications is a sphingosine- 1-phosphate receptor modulator?		
a		Dalfampridine
b	*	Fingolimod
c		Ocrelizumab
d		Teriflunomide

e		All answers are correct
Which of the following medications is associated with cardiac arrhythmias, elevated liver enzymes, macular edema, skin cancer, and herpesvirus infections?		
a		Cyclophosphamide
b	*	Fingolimod
c		Rituximab
d		Mitoxantrone
e		All answers are incorrect
What is the mechanism of action of natalizumab?		
a		It is a sphingosine-1-phosphate receptor agonist
b	*	It interferes with the interaction between very late antigen- 4 and vascular endothelial adhesion molecule-1
c		It is an antibody to CD
d		It inhibits dihydro-orotate dehydrogenase
e		None of the above
Which of the following statements is false?		
a		Mitoxantrone is a chemotherapeutic agent that decreases lymphocyte proliferation
b		There is a limit for mitoxantrone dosing that should not be exceeded in a patient's lifetime
c		There is a black box warning for mitoxantrone because of cardiotoxicity and treatment-associated leukemia
d	*	If cardiotoxicity occurs with mitoxantrone, it occurs during the first months of treatment
e		All answers are correct
A patient who has been doing well on natalizumab presents with changes in behavior, gradually worsening left-sided weakness, and seizures. Which condition needs to be ruled out?		
a	*	Progressive multifocal leukoencephalopathy (PML)
b		Immune reconstitution inflammatory syndrome
c		Hepatic encephalopathy
d		Reversible posterior leukoencephalopathy
e		None of the above
Which of the following features is least consistent with the diagnosis of PML?		
a		Areas of demyelination
b	*	Extensive perivascular cuffing and necrosis
c		Large astrocytes with bizarre nuclei
d		Oligodendrocytes with intranuclear inclusions
e		All answers are correct
Which of the following medications is a monoclonal antibody to CD52 and may carry a high risk for autoimmune complications?		
a	*	Alemtuzumab
b		Daclizumab
c		Ocrelizumab
d		Tocilizumab
e		All of the above
A 30-year-old woman is diagnosed with an asymmetric partial transverse myelitis. An inflammatory etiology is suspected. What is the best treatment?		
a		Interferon-beta
b		Intravenous immunoglobulin (IVIG)
c	*	Methylprednisolone
d		Plasma exchange
e		All answers are incorrect
A 20-year-old woman is diagnosed with transverse myelitis. Which of the following findings suggests that neuromyelitis optica spectrum disorder (NMOSD), not MS, is the etiology?		
a		The presence of oligoclonal bands

b	*	Longitudinally extensive transverse myelitis (i.e., the lesion involves at least three vertebral segments)
c		Involvement of only the dorsolateral cord
d		Involvement of less than one third of the cross-sectional area of the cord
e		All of the above
The presence of which of the following suggests that NMOSD, not MS, is the etiology of transverse myelitis?		
a	*	Aquaporin-4 antibodies
b		Myelin basic protein antibodies
c		Proteolipid protein antibodies
d		Elevated immunoglobulin G (IgG) index
e		All of the above
Which of the following statements is false?		
a		In children, most cases of acute transverse myelitis are idiopathic, whereas in adults, a minority of cases are idiopathic
b		In children, acute transverse myelitis is more commonly associated with MS if fewer than three vertebral segments are involved
c		Methylprednisolone is the treatment of choice for idiopathic acute transverse myelitis
d	*	Infants have a better prognosis than other children with acute transverse myelitis
e		All answers are correct
What is the target for neuromyelitis optica immunoglobulin G (NMO-IgG)?		
a	*	A water channel protein
b		A sodium channel
c		A potassium channel
d		A calcium channel
e		None of the above
Where is the target for NMO-IgG?		
a	*	On astrocytes
b		On oligodendrocytes
c		On ependymal cells
d		On the myelin sheath
e		None of the above
Which of the following potential treatments used for NMOSD is an anti-CD20 monoclonal antibody?		
a		Aquaporumab
b		Eculizumab
c	*	Rituximab
d		Tocilizumab
e		None of the above
Thiopurine methyltransferase levels are checked before NMOSD is treated with which agent?		
a		Aquaporumab
b	*	Azathioprine
c		Mycophenolate mofetil
d		Tocilizumab
e		None of the above
A 10-year-old girl presents with headache, sleepiness, and difficulty walking. She was normal until 2 weeks ago, when she had a virus with fever. MRI shows multiple lesions in the cerebral white matter, thalamus, and basal ganglia. Most of the lesions enhance. Analysis of the cerebrospinal fluid (CSF) shows 30 white blood cells (98% lymphocytes). Oligoclonal bands are negative. What is the most likely diagnosis?		
a		Acute cerebellar ataxia
b	*	Acute disseminated encephalomyelitis (ADEM)
c		Multiple sclerosis
d		Devic disease
e		All answers are incorrect
Which of the following is least typical of acute disseminated encephalomyelitis (ADEM)?		

a	*	Severe axonal loss
b		Perivenular demyelination
c		The presence of lymphocytes around the veins
d		The presence of macrophages around the veins
e		None of the above
Which of the following statements regarding demyelinating disorders in children is false?		
a		For diagnosis of clinically isolated syndrome (CIS), the child should not have encephalopathy (that cannot be explained by fever)
b	*	For diagnosis of CIS, the symptoms must be present for at least 1 week
c		For diagnosis of CIS, the patient should not have had a prior central nervous system (CNS) demyelinating event
d		Absence of encephalopathy with a first CNS demyelinating event indicates an elevated risk for MS
e		All answers are correct
Which of the following statements regarding demyelinating disorders in children is false?		
a		It is recommended that the term recurrent ADEM not be used
b	*	To fulfill criteria for multiphasic ADEM, the two events must occur at least 9 months apart
c		Younger children who are later diagnosed with MS are more likely to have a first event resembling ADEM than are adolescents with MS
d		If a child who has been diagnosed with ADEM is later diagnosed as MS, the onset of MS is said to have occurred when the ADEM event occurred
e		All answers are correct
Which of the following statements regarding demyelinating disorders in children is false?		
a	*	The presence of hypointense lesions on T1-weighted MRI is more suggestive of ADEM than of MS
b		Periventricular lesions are more consistent with MS than with ADEM
c		For diagnosis of MS, the two CNS demyelinating events have to occur at least 30 days apart
d		During childhood, MS usually follows a relapsing remitting course
e		All answers are correct
A 14-year-old girl presents with right arm weakness after an upper respiratory tract infection. MRI shows asymmetric lesions that have increased signal on T2- weighted and fluid-attenuated inversion recovery (FLAIR) sequences in the cortical gray-white junction of both hemispheres, in the deep white matter, and in the thalami and basal ganglia. There is relative sparing of the periventricular white matter. Cognition is normal. What is her diagnosis?		
a	*	Clinically isolated syndrome (CIS)
b		Multiple sclerosis
c		ADEM (monophasic)
d		ADEM (multiphasic)
e		None of the above
A 25-year-old woman with a recent upper respiratory tract infection presents with fever, confusion, and seizures. The C-reactive protein level is elevated. MRI shows diffuse, bilateral asymmetric lesions in the cerebral white matter. There is edema surrounding the lesions, and some of the lesions enhance. Some of the enhancing lesions are C-shaped. Susceptibilityweighted images show multiple punctate hemorrhages in the gray and white matter. She has a CSF pleocytosis. She subsequently becomes comatose and dies. What is the most likely diagnosis?		
a	*	Acute hemorrhagic leukoencephalitis
b		Embolic stroke
c		Malignant MS (Marburg disease)
d		Marchiafava-Bignami disease
e		None of the above
Which of the following causes an ADEM-like illness but is also associated with hepatosplenomegaly, lymphadenopathy, and increased levels of serum ferritin and triglycerides?		
a		Cerebrotendinous xanthomatosis
b		Fabry disease
c	*	Macrophage activation syndrome

d		Metachromatic leukodystrophy
e		None of the above
Which of the following cells are cytotoxic and kill cells infected with viruses?		
a		CD4+ T cells
b	*	CD8+ T cells
c		Gemistocytes
d		Natural killer cells
e		All of the above
Patients with myasthenia gravis who test negative for acetylcholine receptor antibodies may have which of these antibodies?		
a		Anti-GQ1b antibodies
b		Anti-GM1 antibodies
c		Anti-MAG antibodies
d	*	Anti-MuSK antibodies
e		All of the above
Patients with myasthenia gravis with which of these antibodies often have a thymoma?		
a	*	Anti−striated muscle antibodies
b		Anti-GQ1b antibodies
c		Anti-MAG antibodies
d		Anti-Hu antibodies
e		All of the above
Which of the following statements is false?		
a		Plasmapheresis is recommended for patients with acute inflammatory demyelinating polyradiculoneuropathy (AIDP) who cannot walk or who require ventilatory support, and plasmapheresis can be considered in milder cases
b		Plasmapheresis is an option for treatment of chronic inflammatory demyelinating polyneuropathy (CIDP) in the short term
c	*	Plasmapheresis is indicated for treatment of polyneuropathy caused by immunoglobulin M (IgM) monoclonal gammopathy of undetermined significance (MGUS)
d		Plasmapheresis can be considered in acute fulminant CNS demyelinating diseases
e		All answers are correct
Before giving intravenous immunoglobulin (IVIG), it is recommended that the level be checked:		
a		Albumin
b	*	IgA
c		IgE
d		IgG
e		None of the above
A patient presents with limbic encephalitis and neuromyotonia. Morvan syndrome is suspected. Which of the following conditions is most closely associated with Morvan syndrome?		
a		Breast cancer
b	*	Malignant thymoma
c		Small cell lung cancer
d		Thyroid carcinoma
e		None of the above
A 9-year-old boy presents with intractable focal clonic seizures of the left hand and arm. His left hand and arm are becoming progressively more weak. CSF analysis demonstrates no infection. MRI shows atrophy of the right hemisphere. Which of the following antibodies are most likely to be present?		
a		Antibodies to the calcium channel
b		Antibodies to the γ-aminobutyric acid A (GABA A) receptor
c	*	Antibodies to the glutamate receptor 3
d		Antibodies to the sodium channel
e		All answers are correct

Which of the following antibodies have been found in some patients with chronic relapsing inflammatory optic neuropathy and in some patients with ADEM who have prominent optic nerve involvement?		
a		Antibodies to GD1a
b		Antibodies to MAG
c	*	Antibodies to MOG
d		Antibodies to sulfatide
e		None of the above
Which of the following antibodies are most often associated with multifocal motor neuropathy?		
a		Monoclonal anti-MAG antibodies
b	*	Monoclonal anti-GM1 antibodies
c		Polyclonal anti-GM1 antibodies
d		Polyclonal anti-GQ1b antibodies
e		All answers are correct
A 24-year-old woman presents with an unprovoked seizure. Her family asks about workup. Which of the following statements is false?		
a		An electroencephalogram (EEG) is recommended after the first unprovoked seizure
b		Neuroimaging is recommended after the first unprovoked seizure
c		Prolactin can help to differentiate generalized tonicclonic from psychogenic nonepileptic seizures if measured within 10 to 20 minutes after an event
d	*	A complete metabolic profile (CMP), complete blood count (CBC), and lumbar puncture are recommended
e		All answers are correct
A 4-year-old girl presents with her first nonfebrile seizure. Which of the following statements is false?		
a		An EEG is recommended
b	*	Starting an anti-epileptic drug (AED) will impact her long-term prognosis
c		If the risks of medication are less than the risks associated with a second seizure, an AED can be prescribed after the first seizure
d		If imaging is performed, magnetic resonance imaging (MRI) is preferred to computed tomography (CT)
e		All answers are correct
A 19-year-old man presents with intractable generalized tonic-clonic (GTC) seizures. His seizures worsen with sleep deprivation. He reports morning twitching and jerks while taking carbamazepine. He said he had similar muscle twitching during his EEG when the light was flashing. What are the expected EEG findings?		
a	*	Generalized 4- to 6-Hertz (Hz) polyspike and wave discharges with a photoconvulsive response
b		Generalized 3-Hz spike and wave discharges
c		Generalized 2.0-Hz spike and wave discharges
d		Left temporal focal epileptiform discharges
e		None of the above
A 19-year-old man presents with intractable generalized tonic-clonic (GTC) seizures. His seizures worsen with sleep deprivation. He reports morning twitching and jerks while taking carbamazepine. He said he had similar muscle twitching during his EEG when the light was flashing. What is the next step in treatment?		
a		Add phenytoin
b		Change carbamazepine to oxcarbazepine
c	*	Change from carbamazepine to levetiracetam
d		Continue carbamazepine and add levetiracetam
e		None of the above
A 6-year-old patient presents with nocturnal GTC seizures. A few seizures have been preceded by facial twitching, drooling, and speech arrest. What are the expected EEG findings?		
a	*	Focal epileptiform discharges over the centrotemporal regions that increase during sleep
b		Focal epileptiform discharges over the right frontopolar region
c		Focal epileptiform discharges over the midline (at the Cz electrode)
d		Generalized epileptiform discharges at 3 to 4 Hz
e		All answers are incorrect

A 5-year-old patient presents with prolonged nocturnal seizures characterized by eye deviation to the right and unresponsiveness. Seizures are preceded by nausea and accompanied by headache and vomiting. Which of the following is the most likely diagnosis?		
a		Benign rolandic epilepsy
b		Childhood absence epilepsy
c		Juvenile myoclonic epilepsy
d	*	Panayiotopoulos syndrome
e		None of the above
An 11-year-old boy has recurrent seizures during the night characterized by hyperkinetic motor activity. Each seizure is brief and is not followed by a postictal period. His mother has a history of similar nocturnal seizures. A defect in which of the following structures is most likely?		
a		Potassium channel
b		Sodium channel
c		Calcium channel
d		Chloride channel
e	*	Nicotinic acetylcholine receptor
A family brings in their 1-week-old child for evaluation. The patient is having multiple brief focal clonic seizures per day. They started at 3 days of life. She has not had fever. The examination findings are normal. Her inter-ictal EEG is normal. The family reports that the patient's father, paternal uncle, and paternal grandmother had similar events, but their seizures resolved before 1 month of age and they had no further neurologic problems. A defect in which of the following structures is most likely?		
a	*	Potassium channel
b		Sodium channel
c		Calcium channel
d		Chloride channel
e		Nicotinic acetylcholine receptor
An 8-month-old girl has a GTC seizure associated with a temperature of 101°F. She has another GTC seizure 1 month later, in conjunction with an ear infection with fever. The EEG is normal. The patient's mother states that she herself had seizures with fever from 6 months to 7 years of age. Her sister did as well. They are both neurologically normal. What diagnosis should be considered?		
a	*	Febrile seizures plus
b		Benign neonatal familial convulsions
c		Benign myoclonic epilepsy
d		Early infantile epileptic encephalopathy
e		All answers are incorrect
A 2-year-old boy presents with daily seizures. He started having seizures at 8 months of age. He has had status epilepticus on three occasions. Two of those episodes occurred with fever. In one episode, the seizure activity was primarily left-sided; the other two times, it was primarily right-sided. He also has a history of myoclonic jerks and head drops. Interictal EEG shows mild diffuse background slowing, a photoparoxysmal response, and generalized 3-Hz spike and wave discharges. What is the most likely diagnosis?		
a	*	Dravet syndrome
b		Lennox-Gastaut syndrome
c		Early infantile epileptic encephalopathy
d		Early myoclonic encephalopathy
e		All answers are incorrect
A 30-year-old man who has been seizing (left arm clonic activity) for the past 30 minutes arrives in the emergency department. He is given lorazepam and fosphenytoin, and the clonic activity stops. A CT scan of the head was normal, but the patient is difficult to arouse, and his eyes intermittently deviate to the left. What test should be considered?		
a		Positron emission tomography (PET) scan
b		Single photon emission computed tomography (SPECT)
c	*	Electroencephalography (EEG)
d		Magnetoencephalography (MEG)

e		Computed tomography angiography (CTA)
A 26-year-old man has right temporal lobe epilepsy. His seizures have not responded to levetiracetam or lacosamide. What is the next step?		
a	*	Referral to an epilepsy monitoring unit for an epilepsy surgery evaluation
b		Treatment with oxcarbazepine, levetiracetam, and lacosamide
c		Treatment with valproic acid, levetiracetam, and lacosamide
d		Referral to neurosurgery for implantation of a vagus nerve stimulator
e		None of the above
A 32-year-old woman with a history of frequent migraines presents after having three focal-onset seizures. Her family history is remarkable for osteoporosis. Her EEG shows occasional right frontal epileptiform discharges. What do you recommend?		
a		Monitor her clinically
b	*	Start topiramate
c		Start vigabatrin
d		Start carbamazepine
e		All answers are correct
An 18-year-old female patient who is taking valproic acid for juvenile myoclonic epilepsy (JME) asks for a different medicine because she is gaining too much weight. The decision is made to transition her from valproic acid to lamotrigine. Three weeks later, she calls to report a rash that seems to be spreading. What is the next step?		
a	*	Stop lamotrigine
b		Send her to her primary care physician for a workup
c		Check her levels of valproic acid and lamotrigine
d		Discontinue valproic acid
e		All of the above
A 16-year-old boy with JME presents to the emergency department with increased seizures despite documented good serum levels of lamotrigine. The on-call physician suggests a schedule for starting valproic acid. Later in the week, the patient's mother calls to say that he is sleepy and his gait is unsteady. What should be done first?		
a		Head CT
b		MRI with epilepsy protocol
c		Stat EEG
d		Toxicology screen
e	*	Verify that his lamotrigine dose was reduced when valproic acid was started
A 24-year-old woman with epilepsy is considering having children. Which of the following statements is false?		
a	*	Pregnancy is associated with a significantly increased risk for status epilepticus
b		To reduce major congenital malformations, valproic acid and polytherapy should be avoided if possible
c		Children born to mothers who are taking anti-epileptic medications have an increased risk of being small for gestational age
d		Anti-epileptic medications such as valproic acid, phenytoin, carbamazepine, and topiramate are associated with an increased risk of facial clefts
e		All answers are correct
A 7-year-old boy presents with frequent staring episodes. The mother says he pauses during activities, stares off, and then returns to the activity. She can't get his attention during the episodes. He is normal afterward. This occurs multiple times per day. His mother states that he once had an episode while blowing a pinwheel. He is otherwise normal, and his neurologic examination is normal. What is the medication of choice?		
a	*	Ethosuximide
b		Valproic acid
c		Lamotrigine
d		Carbamazepine
e		Levetiracetam
A 20-year-old woman with Lennox-Gastaut syndrome has daily myoclonic, atonic, and tonic seizures. Her seizures have not responded to levetiracetam, topiramate, zonisamide, clobazam, clonazepam, or rufinamide. Which medication should be considered?		

a	*	Felbamate
b		Phenytoin
c		Carbamazepine
d		Gabapentin
e		All of the above
Elementary auditory seizures, such as a humming or buzzing sound, arise from which area?		
a		Frontal lobe
b		Mesial temporal lobe
c	*	Lateral temporal lobe
d		Parietal lobe
e		None of the above
Unformed visual hallucinations, such as spots and flashing lights, arise from which area?		
a		Parietal lobe
b		Mesial temporal lobe
c		Lateral temporal lobe
d		Temporal-occipital association cortex
e	*	Occipital lobe
Formed visual scenes arise from which area?		
a		Parietal lobe
b		Mesial temporal lobe
c		Lateral temporal lobe
d	*	Temporal-occipital association cortex
e		Occipital lobe
Which of the following statements is false?		
a		Patients with juvenile absence epilepsy (JAE) tend to have fewer absence seizures than patients with childhood absence epilepsy (CAE)
b	*	Absence seizures in JAE tend to be shorter than absence seizures in CAE
c		Patients with JAE are more likely to have myoclonic and GTC seizures than patients with CAE
d		Patients with JAE may need lifelong treatment
e		All answers are correct
What is the most common generalized epilepsy syndrome in adults?		
a		Juvenile absence epilepsy
b	*	Juvenile myoclonic epilepsy
c		Epilepsy with GTC seizures alone
d		Childhood absence epilepsy
e		None of the above
Which of the following is not a channelopathy?		
a		Absence epilepsy and episodic ataxia
b		Benign familial neonatal seizures
c		Generalized epilepsy with febrile seizures plus
d	*	Familial lateral temporal lobe epilepsy
e		All of the above
Autosomal dominant focal epilepsy with auditory features is associated with mutations in which gene?		
a		Nicotinic acetylcholine receptor
b		GABA A receptor
c		GABA B receptor
d		Glycine receptor
e	*	Leucine-rich glioma inactivated (LGI1) gene
Which of the following medications can exhibit zero-order kinetics?		
a		Levetiracetam
b		Valproic acid
c		Phenobarbital

d	*	Phenytoin
e		None of the above
Which of the following medications may be associated with polycystic ovary syndrome and fatal hemorrhagic pancreatitis?		
a		Levetiracetam
b	*	Valproic acid
c		Phenobarbital
d		Phenytoin
e		Oxcarbazepine
A 30-year-old woman presents in generalized status epilepticus. Which of the following medications should be administered intravenously first?		
a		Diazepam
b		Fosphenytoin
c		Levetiracetam
d	*	Lorazepam
e		All answers are correct
A 2-week-old child presents with tonic seizures. EEG shows burst suppression during wakefulness and sleep. MRI shows hemimegalencephaly. What is the most likely diagnosis?		
a		Doose syndrome (myoclonic-astatic epilepsy)
b		Early myoclonic encephalopathy of infancy
c	*	Ohtahara syndrome (early infantile epileptic encephalopathy)
d		West syndrome
e		All answers are incorrect
Most focal seizures in adults arise from which area?		
a		Frontal lobe
b	*	Temporal lobe
c		Parietal lobe
d		Occipital lobe
e		All of the above
Which of the following is not a common feature of seizures arising from the supplemental motor area?		
a	*	Prolonged duration
b		Tendency to occur during sleep
c		Often stereotypical
d		Multiple occurrences in a single night
e		All of the above
Which of the following medications is least likely to lower the seizure threshold?		
a		Bupropion
b		Clonidine
c		Tramadol
d		Diphenhydramine
e	*	Cetirizine
Which of the following anti-epileptic medications is not a T-type (low voltage–activated) calcium channel blocker?		
a		Ethosuximide
b	*	Topiramate
c		Valproic acid
d		Zonisamide
e		None of the above
Which of the following anti-epileptic medications is not usually associated with weight loss?		
a		Felbamate
b	*	Levetiracetam
c		Topiramate

d		Zonisamide
e		All of the above
Which of the following anti-epileptic medications is broad spectrum?		
a		Carbamazepine
b		Ethosuximide
c		Oxcarbazepine
d	*	Valproic acid
e		None of the above
Which of the following is the most effective medication for a patient with childhood absence epilepsy and GTC seizures?		
a		Ethosuximide
b		Oxcarbazepine
c		Tiagabine
d	*	Valproic acid
e		All of the above
Which of the following medications has high protein binding?		
a		Ethosuximide
b		Gabapentin
c		Levetiracetam
d	*	Phenytoin
e		Vigabatrin
A 75-year-old woman presents with confusion. Her laboratory studies show hyponatremia. Which of the following medications is most likely to cause this condition?		
a	*	Oxcarbazepine
b		Lacosamide
c		Clobazam
d		Zonisamide
e		None of the above
Which of the following anti-epileptic medications blocks the metabolism of γ-aminobutyric acid (GABA) by GABA transaminase?		
a		Clobazam
b		Felbamate
c		Tiagabine
d	*	Vigabatrin
e		None of the above
Which of the following anti-epileptic medications is least likely to affect the eye?		
a	*	Clobazam
b		Ezogabine/retigabine
c		Topiramate
d		Vigabatrin
e		None of the above
Which of the following medications can increase absence and myoclonic seizures?		
a	*	Carbamazepine
b		Clonazepam
c		Lamotrigine
d		Valproic acid
e		None of the above
Fill in the blank: Patients taking _____ require the slowest titration of lamotrigine.		
a		Carbamazepine
b		Phenobarbital
c		Phenytoin
d	*	Valproic acid

e		None of the above
Which of the following medications is least likely to cause weight gain?		
a		Pregabalin
b		Gabapentin
c		Valproic acid
d	*	Lamotrigine
e		None of the above
Which of the following medications places people of Asian descent with the HLA-B*1502 antigen at higher risk for Stephens-Johnson syndrome than other patients taking the same medication?		
a	*	Carbamazepine
b		Lacosamide
c		Valproic acid
d		Topiramate
e		All answers are correct
Patients with short QT syndrome are advised not to take which of the following medications?		
a		Carbamazepine
b		Zonisamide
c	*	Rufinamide
d		Ezogabine/retigabine
e		Topiramate
Which of the following medications affects sodium channels differently than the others?		
a		Phenytoin
b		Lamotrigine
c		Oxcarbazepine
d	*	Lacosamide
e		None of the above
Which of the following medications acts on the alpha- 2-delta subunit of high voltage–activated calcium channels?		
a		Ezogabine/retigabine
b		Valproic acid
c		Rufinamide
d	*	Gabapentin
e		All of the above
Which of the following medications modulates synaptic vesicle protein 2A (SV2A)?		
a	*	Levetiracetam
b		Lacosamide
c		Lamotrigine
d		Valproic acid
e		Perampanel
A 5-year-old patient presents with decreased speech and three seizures over the past 3 weeks. His parents report that he first started having problems with comprehension, then started speaking less. Which of the following EEG findings is most likely?		
a		Frequent left centrotemporal discharges with a horizontal dipole
b	*	Electrical status epilepticus in sleep
c		Left temporal focal epileptiform discharges
d		Left parietal focal epileptiform discharges
e		All of the above
Which of the following features is more consistent with psychogenic nonepileptic seizures than with epilepsy?		
a		Tongue-biting
b		The event is stereotyped
c	*	Prolonged events occur only in public settings
d		Significant postictal confusion

e		None of the above
What is the most common cause of bacterial meningitis?		
a		Haemophilus influenzae
b		Neisseria meningitidis
c		Staphylococcus aureus
d	*	Streptococcus pneumoniae
e		None of the above
Which medications are used for empiric treatment of bacterial meningitis in patients younger than 50 years old who are otherwise healthy?		
a		A second-generation cephalosporin and vancomycin
b	*	Dexamethasone, a third-generation cephalosporin, and vancomycin
c		Ceftriaxone alone
d		Ampicillin and ceftriaxone
e		None of the above
Which of the following statements is false?		
a		Chronic meningitis is meningitis lasting longer than 4 weeks
b		Fever is the most common clinical finding in acute meningitis
c		Some patients with meningitis need empiric treatment with vancomycin, ceftriaxone, ampicillin, dexamethasone, and acyclovir
d	*	Significantly elevated C-reactive protein and procalcitonin levels are more suggestive of viral meningitis than bacterial meningitis
e		All answers are correct
Which of the following medications is added for coverage of anaerobic bacteria in patients who have otitis, sinusitis, or mastoiditis and suspected meningitis?		
a		Ampicillin
b		Doxycycline
c		Linezolid
d	*	Metronidazole
e		All of the above
The neonatal intensive care unit requests a consultation on a newborn that they suspect has neonatal meningitis. If they are correct, which organism is most likely to be responsible?		
a		Escherichia coli
b	*	Group B Streptococcus
c		Listeria monocytogenes
d		Streptococcus pneumoniae
e		None of the above
Patients with defects in cell-mediated immunity are at increased risk for meningitis caused by which of the following organisms?		
a		Enterobacteriaceae
b	*	Listeria monocytogenes
c		Neisseria meningitidis
d		Streptococcus pneumoniae
e		All of the above
A 24-year-old nurse is exposed to meningococcal meningitis in the emergency department. What is the recommended treatment?		
a		Ethambutol
b	*	Rifampin
c		Streptomycin
d		Isoniazid (INH)
e		All of the above
Which of the following conditions is least likely to be associated with a brain abscess?		
a		Lung abscess

b		Cyanotic heart disease
c		Osler-Weber-Rendu disease
d	*	Angelman syndrome
e		None of the above
Which of the following diseases produces a central nervous system (CNS) toxin?		
a		Diphtheria
b		Shigellosis
c		Tetanus
d	*	All of the above produce a CNS toxin
e		None of the above produce a CNS toxin
A 20-year-old man presents with fever, headache, malaise, vomiting, and left leg weakness. On examination, his left leg is flaccid and areflexic. Sensation is intact. What is the most likely causative organism?		
a		Cytomegalovirus (CMV)
b		Salmonella
c		Shigella
d	*	West Nile virus
e		None of the above
What is the most common type of virus to cause meningitis?		
a		Arthropod-borne viruses
b	*	Enteroviruses
c		Herpes simplex virus type 1 (HSV-1)
d		Herpes simplex virus type 2 (HSV-2)
e		None of the above
A newborn develops seizures. Head computed tomography (CT) shows periventricular calcifications. What is the most likely diagnosis?		
a	*	Congenital CMV infection
b		Congenital toxoplasmosis
c		Congenital syphilis
d		Congenital rubella
e		None of the above
Which of the following viruses can cause tremor, myoclonus, parkinsonism, a poliomyelitis-like illness, and encephalitis?		
a		Epstein-Barr virus (EBV)
b		Enterovirus
c		HSV-1
d	*	West Nile virus
e		All of the above
Lymphocytic choriomeningitis virus is transmitted from which infected animals?		
a		Birds
b		Cats
c	*	Hamsters or mice
d		Lizards
e		None of the above
A 50-year-old woman presents with a blistering rash on her trunk and complains of pain and tingling in the area. What is the most likely diagnosis?		
a	*	Recurrence of a latent varicella-zoster virus
b		CMV polyradiculopathy
c		HSV-1 infection
d		HSV-2 infection
e		None of the above
Which of the following is most suggestive of an acute Epstein-Barr virus (EBV) infection?		
a	*	IgM to the EBV viral capsid antigen (VCA)

b		IgG to the EBV viral capsid antigen (VCA)
c		IgM to Epstein-Barr nuclear antigen (EBNA)
d		IgG to Epstein-Barr nuclear antigen (EBNA)
e		All of the above
A 30-year-old man with human immunodeficiency virus (HIV) infection presents with chronic headache, confusion, and fever. On examination, there is mild nuchal rigidity. Lumbar puncture shows an elevated opening pressure, 8 red blood cells (RBCs), 175 white blood cells (WBCs) with a lymphocytic predominance, a glucose level of 35 mg/dL, and a protein level of 100 mg/dL. Gram staining is negative. India ink staining reveals encapsulated fungi. What is the most likely diagnosis?		
a		Aspergillosis
b	*	Cryptococcosis
c		Coccidioidomycosis
d		Histoplasmosis
e		None of the above
CSF eosinophilic pleocytosis is most suggestive of which of the following infections?		
a		Aspergillosis
b		Blastomycosis
c		Cryptococcosis
d	*	Coccidioidomycosis
e		Histoplasmosis
A 65-year-old man with renal failure develops meningitis. After his death, an autopsy is performed. He has thickened leptomeninges and soap bubble–like lesions in the basal ganglia. Which of the following infections is most likely?		
a		Aspergillosis
b	*	Cryptococcus neoformans
c		Coccidioidomycosis
d		Histoplasmosis
e		None of the above
Which of the following infections is most likely to occur in patients with poorly controlled diabetes and to cause black nasal mucosa?		
a		Blastomycosis
b		Coccidioidomycosis
c		Histoplasmosis
d	*	Mucormycosis
e		None of the above
Which of the following statements is false?		
a		Tuberculomas can resemble posterior fossa tumors
b		Tuberculosis (TB) can be associated with plasma cells in the CSF
c		TB can cause stroke
d	*	TB usually causes noncaseating granulomas
e		TB can cause cranial nerve palsies and hydrocephalus
What is the most common cause of sporadic viral encephalitis?		
a		EBV
b	*	HSV-1
c		HSV-2
d		West Nile virus
e		None of the above
A 20-year-old man presents with a 2-day history of headache, fever, and worsening confusion. In the emergency department, he has a focal seizure characterized by left-sided clonic activity of the face, arm, and leg. CSF analysis shows 300 RBCs, 120 WBCs (85% lymphocytes), glucose 60 mg/dL, and protein 100 mg/dL. CSF Gram staining is negative. Besides magnetic resonance imaging (MRI) of the brain, which test would be the most helpful in diagnosing this condition?		
a	*	Electroencephalography (EEG)

b		Single-photon emission computed tomography (SPECT)
c		Positron emission tomography (PET)
d		Magnetic resonance angiogram (MRA)
e		All of the above
A patient presenting shortly after onset of symptoms is thought to have HSV encephalitis. However, PCR analysis of the CSF is negative. What is the next step?		
a	*	Continue acyclovir and repeat the lumbar puncture
b		Discontinue acyclovir to prevent renal toxicity
c		Repeat the PCR on the same sample
d		Send CSF to an outside laboratory to verify that the PCR is negative
e		None of the above
A patient presents with new-onset seizures. MRI shows multiple cystic lesions. CT shows calcifications. What is the recommended treatment?		
a	*	Albendazole plus dexamethasone or prednisolone
b		Dexamethasone
c		Pyrimethamine
d		Everolimus
e		All answers are correct
Which of the following statements is false?		
a		Neurocysticercosis is the most common helminthic infection involving the CNS
b		MRI may miss some cases of neurocysticercosis: Patients can have brain parenchymal calcifications alone, which are missed on MRI but seen on CT
c		A patient with only calcifications does not need to be treated with cysticidal medications
d	*	Serum immune diagnostic tests for neurocysticercosis are both very sensitive and very specific
e		All answers are correct
An 18-year-old patient presents with fever, headache, confusion, and rash after a recent hiking trip. The rash started as macules at his wrists and ankles but now involves his trunk and face. CSF shows a mild pleocytosis. How is this treated?		
a		Augmentin
b	*	Doxycycline
c		Erythromycin
d		Ceftriaxone
e		All of the above
Which of the following statements is true?		
a		A brain lesion thought to be toxoplasmosis should be biopsied before treatment is begun
b		A negative CSF PCR result for toxoplasmosis excludes the diagnosis
c	*	Toxoplasmosis is the most common cause of a focal mass lesion in the brain of patients with HIV infection
d		Lack of antibodies to toxoplasmosis excludes the diagnosis
e		None of the above
Which of the following statements is false?		
a		Neurosyphilis can cause Heubner arteritis leading to stroke
b	*	When neurosyphilis involves the spinal cord, it is most often associated with degeneration of the anterior horn cells
c		Neurosyphilis is associated with microglial proliferation in the cortex and iron deposition
d		Plasma cells may be present in the CSF of patients with neurosyphilis
e		All answers are correct
Poliovirus has the greatest affinity for which type of cell?		
a		Cells in the dorsal root ganglion
b		Cells in the pons
c		Cells in the intermediolateral (IML) column
d	*	Large motor cells in the ventral horn

e		None of the above
CSF PCR analysis for which of the following viruses is often positive in patients with AIDS-associated primary CNS lymphoma and is a sensitive indicator of this tumor?		
a		CMV
b	*	EBV
c		Human herpesvirus type 6 (HHV-6)
d		JC virus
e		All of the above
Which of the following organisms infects the CNS via fast retrograde axonal transport from muscle and is associated with intracytoplasmic intraneuronal inclusions?		
a		CMV
b		HIV
c	*	Rabies virus
d		Bartonella
e		All of the above
A 24-year-old man with HIV infection who is taking highly active antiretroviral therapy (HAART) develops focal seizures. Which anti-epileptic medication should be started?		
a	*	Levetiracetam
b		Carbamazepine
c		Phenytoin
d		Valproic acid
e		All of the above
Which of the following statements is false?		
a	*	Doxycycline is the preferred treatment for post-treatment Lyme disease syndrome
b		Doxycycline is the preferred oral treatment for cranial neuropathy associated with Lyme disease
c		Encephalomyelitis and encephalopathy due to Lyme disease should be treated with parenteral antibiotics
d		Ceftriaxone, penicillin G, or cefotaxime may be used to treat Lyme disease when parenteral treatment is indicated
e		All answers are correct
Which of the following diseases is associated with demyelination at the juxtacortical white matter, enlarged oligodendrocytes containing virions, and bizarre astrocytes?		
a		EBV infection
b		HIV infection
c	*	Progressive multifocal leukoencephalopathy (PML)
d		West Nile virus infection
e		All of the asbove
Subacute sclerosing panencephalitis is the name for a chronic infection with which of the following viruses?		
a	*	Measles virus
b		Mumps virus
c		Rubella virus
d		Varicella virus
e		None of the above
Cowdry A bodies are not associated with which of the following diseases?		
a		Herpes
b		Subacute sclerosing panencephalitis (SSPE)
c		CMV
d	*	Polio
e		All of the above
Which type of inflammation is found in patients with prion infections?		
a		Eosinophils
b		Lymphocytes

c		Polymorphonuclear lymphocytes
d		Multinucleated giant cells
e	*	None of the above
Which of the following features is more characteristic of variant Creutzfeldt-Jakob disease than of sporadic Creutzfeldt-Jakob disease?		
a	*	Florid plaques
b		Increased signal in the basal ganglia and/or cortical ribbon
c		Periodic sharp wave complexes on EEG
d		Shorter clinical course
e		All of the above
Which of the following viruses causes T-cell leukemia and tropical spastic paraparesis?		
a		CMV
b		EBV
c		HIV
d	*	Human T-cell lymphotropic virus-1 (HTLV-1)
e		All of the above
A 70-year-old woman presents with chronic severe headache, weight loss, anemia, and aching shoulders. Which test should be performed first?		
a	*	Erythrocyte sedimentation rate (ESR)
b		Thyroid-stimulating hormone
c		Liver function tests
d		Reticulocyte count
e		All of the above
A 14-year-old presents with worsening headaches. He denies photophobia and phonophobia but endorses vomiting. The headaches are most severe when he awakens. They worsen when he bends over to put on his shoes in the morning. The physical examination, including funduscopy, is normal. Which of the following should be done first?		
a		Prescribe ondansetron and obtain a headache diary
b	*	MRI of the brain
c		Trial of sumatriptan
d		Initiate topiramate
e		All of the above
A 20-year-old woman presents with weekly headaches for the past 4 months. She has a feeling of pressure on both sides of her head. The pain is mild to moderate and lasts an hour. She is able to continue her activities but loses her appetite. She has some photophobia. The funduscopic examination is normal. What is the most likely diagnosis?		
a		Cluster headache
b		Migraine headache
c	*	Tension-type headache
d		Pseudotumor cerebri
e		None of the above
A mother brings in her 7-year-old son because she thinks he has migraines. He also tends to get motion sickness. Which of the following suggests a diagnosis other than migraine?		
a		He has bilateral pain
b		He does not complain of photophobia
c	*	He has occipital pain
d		He tends to get motion sickness
e		None of the above
Which of the following is more typical of migraine without aura than of migraine with aura?		
a		Cortical spreading depression
b	*	A relationship to the menstrual cycle
c		Increased risk for ischemic stroke

d		Visual changes
e		All of the above
A 9-year-old boy presents with a 3-month history of headaches. He has severe pain at his right temple, nausea, and photophobia. The headaches start before lunch, can last all day, and do not respond to acetaminophen, which he takes when he gets home from school. The headaches are occurring at least twice a week. Which of the following is recommended?		
a	*	Start a preventive medication
b		Prescribe acetaminophen with codeine for severe headaches
c		Prescribe butalbital for severe headaches
d		Prescribe prednisone
e		All of the above
An 8-year-old patient presents with episodes of unsteadiness, double vision, and dysarthria. These are typically followed by headache. Computed tomography (CT) of the head and the results of laboratory studies are normal. Which of the following is the most likely cause?		
a		Abdominal migraine
b		Benign paroxysmal vertigo
c		Exploding head syndrome
d	*	Migraine with brainstem aura
e		None of the above
What is the mechanism of action of sumatriptan?		
a		It is a 5-HT1A receptor antagonist
b	*	It is a 5-HT1D receptor agonist
c		It is a 5-HT 2A/2C receptor antagonist
d		It is a 5-HT3 agonist
e		All of the above
A 30-year-old patient with a previous diagnosis of migraines presents with a complaint of daily headaches for the past 3 months. Unlike her migraines, these headaches are not associated with photophobia or vomiting. She says the headaches are constant, so she must take ibuprofen at least twice daily. Her examination findings are normal. Which of the following topics needs to be discussed with this patient?		
a		The benefits of naproxen over ibuprofen
b		The benefits of alternating ibuprofen and acetaminophen
c		The benefits of indomethacin over ibuprofen
d	*	Medication-overuse headache
e		None of the above
A 24-year-old woman with a history of migraine with aura presents with a 4-day history of headache. She said it started like her usual headache, with an aura of squiggly lines, and then was followed by throbbing pain, nausea, vomiting, and photophobia. However, it did not respond to sumatriptan as her headaches usually do. Her last dose of sumatriptan was 2 hours before arrival in the emergency department. Which of the following medications should be avoided at this time?		
a		Intravenous magnesium
b		Metoclopramide
c	*	Dihydroergotamine
d		Ketorolac
e		None of the above
Which of the following conditions may be followed by migraine variants and eventually by migraine with aura when the patient is older. (Some cases of this condition have been linked to mutations in CACNA1A).		
a	*	Benign paroxysmal torticollis of infancy
b		Episodic ataxia 1
c		Paroxysmal kinesigenic dyskinesia
d		Paroxysmal tonic upgaze of infancy
e		All of the above
A 30-year-old man presents to the emergency department with severe, stabbing pain above his right eye. He reports that this has happened several times before. Alcohol seems to be a trigger. He has headaches several		

days in a row, and then they recur about 2 months later. Often they wake him from sleep. On examination, he has ptosis, conjunctival injection, and rhinorrhea ipsilateral to his pain. He appears restless, and he reports that his pain is worse when he lies down. Which of the following is the best treatment option?		
a		Indomethacin
b	*	Oxygen via a nonrebreather
c		Prednisone
d		Caffeine
e		None of the above
A 32-year-old woman presents with episodes of brief, intense pain involving her right cheek and jaw. Applying makeup can trigger an attack. After the pain occurs, there is a period of time during which she can apply makeup without pain. What is her diagnosis?		
a		Hemicrania continua
b		Short-lasting unilateral neuralgiform headache attacks with cranial autonomic features (SUNA)
c		Short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing (SUNCT)
d	*	Trigeminal neuralgia
e		None of the above
A 45-year-old man presents with recurrent headache when he coughs. He has sudden, bilateral head pain when he coughs, lasting for a few seconds. He does not have any other types of headaches. What is the most effective treatment?		
a		Antitussives
b	*	Indomethacin
c		Naproxen
d		Verapamil
e		None of the above
A 26-year-old man presents with a headache that worsens when he stands. He also complains of nausea and photophobia. On examination, he is afebrile and his blood pressure is normal. He does have mild neck stiffness. MRI shows diffuse pachymeningeal enhancement. What is the diagnosis?		
a	*	Intracranial hypotension
b		Subarachnoid hemorrhage
c		Viral meningitis
d		Migraine
e		None of the above
A 20-year-old woman presents with constant, diffuse headaches; blurry vision; and pulsatile tinnitus. She says she is trying to be healthy but hates to exercise, so she takes four One-a-Day vitamins per day. She is taking no other medications. The findings from CT and MRI ordered by her primary care physician were normal. Which of the following diagnoses should be suspected?		
a	*	Intracranial hypertension
b		Migraine
c		Tension headache
d		Refractive error
e		None of the above
Which of the following conditions is characterized by acute onset of a daily headache in which the pain becomes continuous and unremitting within 24 hours of onset and lasts for longer than 3 months.		
a		Colloid cyst of the third ventricle
b	*	New daily persistent headache
c		Thunderclap headache
d		Reversible cerebral vasoconstriction syndrome
e		All of the above
Which of the following is the gold standard for diagnosis of small-fiber neuropathy?		
a		Electromyography (EMG)
b		Nerve conduction studies (NCS)
c	*	Skin biopsy
d		Sural nerve biopsy

e		None of the above
A 36-year-old woman reports frequent episodes of brief stabbing pain in the distribution of the maxillary division of the trigeminal nerve (V2). Which of the following statements is false?		
a		Features that help to distinguish symptomatic trigeminal neuralgia from classic trigeminal neuralgia include sensory deficits and bilateral involvement
b		If symptomatic trigeminal neuralgia is suspected, MRI or trigeminal reflex testing is reasonable
c		Carbamazepine and oxcarbazepine are first-line treatments for classic trigeminal neuralgia (no established etiology)
d	*	Topical ophthalmic anesthesia is helpful in treating classic trigeminal neuralgia
e		All answers are correct
A 50-year-old woman with a history of herpes zoster presents with persistent pain despite resolution of the rash 4 months ago. Which of the following treatments is least likely to be helpful?		
a		Gabapentin
b		Lidocaine patch
c		Nortriptyline
d	*	Indomethacin
e		All of the above
A 20-year-old woman with a recent radius fracture presents with pain, weakness, and swelling in her right hand. She reports a persistent burning pain involving the whole hand and says that the pain is unbearable when she moves the hand. Her entire hand is swollen. She also reports that the hand sweats less than her normal hand and is more hairy than it used to be. Which of the following is the most likely diagnosis?		
a	*	Complex regional pain syndrome
b		Poor casting
c		Dejerine-Roussy syndrome
d		Radicular pain
e		None of the above
Mutations in which of the following channels can cause increased pain sensitivity? (Other mutations in this channel can cause congenital inability to experience pain).		
a		Chloride
b		Potassium
c	*	Sodium
d		Magnesium
e		All of the above
A 21-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands. The most likely diagnosis in this case is:		
a		Seizure
b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis
e		Parkinson’s disease
A 21-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Investigation of oligoclonal bands are the:		
a		Wave frequency changes on the EEG during sleep
b		Markings about the iris
c		Pathologic features of Alzheimer’s disease

d		Chromosomal markings found with multiple sclerosis (MS)
e	*	Immunoglobulin patterns in the CSF with MS
On briskly flexing the neck forward, a patient with MS disease may report:		
a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain
A 27-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		
a		Adrenoleukodystrophy
b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan's disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern, and results in:		
a		Anencephaly
b		Microcephaly
c		Porencephaly
d	*	Macrocephaly
e		Dolichocephaly
A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis, than appear incontinence of urine, numbness in the right toes more than the left, and pain in the thighs and back. Surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Which of the following would be the most appropriate next diagnostic test?		
a		Cerebral angiography
b		Spinal angiography
c	*	MRI of the spinal cord
d		Spinal cord biopsy
e		VER
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (SELECT 1 DIAGNOSIS):		
a	*	Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness a 19-year-old man complains of headache and neck stiffness. After these complaints, cognitive functions deteriorate. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d	*	Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two brothers, 4 and 7 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains		

reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have abnormally low serum cortisol levels. (Select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c	*	Adrenoleukodystrophy
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 54-year-old alcoholic man is brought to the emergency room with profound agitation. He is believed to be suffering from delirium tremens and is treated with thiamine and intravenous fluids. His serum sodium is noted to be markedly depressed, and intravenous supplements are adjusted to rapidly correct this hyponatremia. He becomes acutely quadriplegic and unresponsive and dies within 24 h. (select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b	*	Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. During relapse of disease he received steroids at that time. He began interferon-1A 4 years ago. One year ago, he developed right leg weakness, constipation, and urinary urgency. He received steroids at that time as well. He now presents with new symptoms that concern him about the start of a new flare (decreased sensation in the palm of his right hand that is worse when he exercises, diminished sensation along the lower right trunk in the front and back). Examination findings include full visual fields with a left afferent pupillary defect. Hypoesthesia over roughly the T8 to T12 dermatomes. The most appropriate pharmacological treatment for this patient at this time is:		
a		Interferon-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole
Past history of patient includes an episode of optic neuritis in the left eye 2 years ago. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The evoked response pattern that is most often abnormal in patients with early Multiply Sclerosis is the:		
a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test
A 37-year-old woman with progressive multiple sclerosis is being admitted for intravenous glucocorticoid therapy. She was diagnosed with multiple sclerosis 10 years ago after presenting with bilateral decreased visual acuity. She had an abnormal MRI at that time. She has been hospitalized approximately nine times since presentation with her relapse.For the past 2 years she has been on cyclophosphamide and methylprednisolone, originally every 4 weeks, and now every 6 weeks, with the last treatment 1 month ago. For the 2 months prior to admission, the patient mild unsteadiness walking and other neurological symptom of defeact. Included among her admission orders should be:		
a		Heart-healthy diet
b	*	Ranitidine 150 mg bid
c		Neurological checks every hour for the first 48 h
d		Placement of central venous line
e		Stat head CT for change in mental status
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		

a		Adrenoleukodystrophy
b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy
A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis. He has recently had urge incontinence of urine, numbness in the right toes more than the left, and pain in the thighs and back. He was referred when surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Cystometrographic analysis of bladder function in this patient is likely to show which of the following abnormalities?		
a		Bladder hypotonia
b		Large residual volume of urine
c	*	Premature bladder emptying
d		Good voluntary control of bladder emptying
e		Urinary tract infection
A 3-month-old child with demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern. Three months later, the patient has worsening leg weakness. He has severe spasms of his legs bilaterally, and is increasingly unable to ambulate because of this. A reasonable symptomatic treatment option would be which of the following?		
a		Cyclophosphamide
b	*	Baclofen
c		Gabapentin
d		Amitriptyline hydrochloride
e		Propranolol
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan's disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern. Which of the following factors might be expected to worsen his condition?		
A		Bright lights
B		Red wine
C		Tyramine-containing compounds
D	*	Hot weather
E		Amantadine
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (select 1 diagnosis):		
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Two weeks after recovering from a febrile illness, a 19-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (select 1 diagnosis):		
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e		Pelizaeus-Merzbacher disease
A 54-year-old alcoholic man is brought to the emergency room with profound agitation. He is believed to be suffering from delirium tremens and is treated with thiamine and intravenous fluids. His serum sodium is noted to be markedly depressed, and intravenous supplements are adjusted to rapidly correct this hyponatremia. He becomes acutely quadriplegic and unresponsive and dies within 24 h. (select 1 diagnosis):		
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A 37-year-old woman with progressive multiple sclerosis is being admitted for intravenous glucocorticoid therapy. She was diagnosed with multiple sclerosis 10 years ago after presenting with bilateral decreased visual acuity. She had an abnormal MRI at that time. She has been hospitalized approximately nine times since presentation with her relapse. For the past 2 years she has been on cyclophosphamide and methylprednisolone, originally every 4 weeks, and now every 6 weeks, with the last treatment 1 month ago. For the 2 months prior to admission, the patient mild unsteadiness walking and other neurological symptom of defeact. Included among her admission orders should be:		
a		Heart-healthy diet
b	*	Ranitidine 150 mg bid
c		Neurological checks every hour for the first 48 h
d		Placement of central venous line
e		Stat head CT for change in mental status
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		
a		Adrenoleukodystrophy

b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy
A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis, than appear incontinence of urine, numbness in the right toes more than the left, and pain in the thighs and back. Surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Cystometrographic analysis of bladder function in this patient is likely to show which of the following abnormalities?		
a		Bladder hypotonia
b		Large residual volume of urine
c	*	Premature bladder emptying
d		Good voluntary control of bladder emptying
e		Urinary tract infection
A 3-month-old child has a preliminary diagnosis of Canavan's disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern. Three months later, the patient has worsening leg weakness. He has severe spasms of his legs bilaterally, and is increasingly unable to ambulate because of this. A reasonable symptomatic treatment option would be which of the following?		
a		Cyclophosphamide
b	*	Baclofen
c		Gabapentin
d		Amitriptyline hydrochloride
e		Propranolol
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan's disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern. Which of the following factors might be expected to worsen his condition?		
a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (Select 1 diagnosis):		
a	*	Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness associated with a productive cough, a 19-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (Select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d	*	Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two brothers, 4 and 7 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have		

abnormally low serum cortisol levels. (Select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c	*	Adrenoleukodystrophy
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A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. During relapse of disease he received steroids at that time. He began interferon-1A 4 years ago. One year ago, he developed right leg weakness, constipation, and urinary urgency. He received steroids at that time as well. He now presents with new symptoms that concern him about the start of a new flare (decreased sensation in the palm of his right hand that is worse when he exercises, diminished sensation along the lower right trunk in the front and back). Examination findings include full visual fields with a left afferent pupillary defect. Hypoesthesia over roughly the T8 to T12 dermatomes. The most appropriate pharmacological treatment for this patient at this time is:		
a		Interferon-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole
Past history of patient includes an episode of optic neuritis in the left eye 2 years ago. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The evoked response pattern that is most often abnormal in patients with early Multiply Sclerosis is the:		
a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
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a		Cerebral angiography
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a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (select 1 diagnosis):		
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b		Central pontine myelinolysis
c	*	Adrenoleukodystrophy
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 21-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands.The most likely diagnosis in this case is:		
a		Seizure

b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis
e		Parkinson's disease

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a		Wave frequency changes on the EEG during sleep
b		Markings about the iris
c		Pathologic features of Alzheimer's disease
d		Chromosomal markings found with multiple sclerosis (MS)
e	*	Immunoglobulin patterns in the CSF with MS

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a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain

A 21-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands. The CSF in persons with multiple sclerosis will typically exhibit:

a		Glucose content of less than 20% of the serum content
b		Persistently elevated total protein content
c	*	Persistently elevated immunoglobulin G (IgG) content
d		Mononuclear cell counts of greater than 100 cells per/L
e		Erythrocyte counts of greater than 10 cells per/L

Past history of patient includes an episode of optic neuritis in the left eye 2 years ago. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The evoked response pattern that is most often abnormal in patients with early Multiply Sclerosis is the:

a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test

A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. During relapse of disease he received steroids at that time. He began interferon-1A 4 years ago. One year ago, he developed right leg weakness, constipation, and urinary urgency. He received steroids at that time as well. He now presents with new symptoms that concern him about the start of a new flare (decreased sensation in the palm of his right hand that is worse when he exercises, diminished sensation along the lower right trunk in the front and back). Examination findings include full visual fields with a left afferent pupillary defect. Hypoesthesia over roughly the T8 to T12 dermatomes. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The most appropriate pharmacological treatment for this patient at this time is:

a		Interferon-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole

A 23-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:

a		Adrenoleukodystrophy
b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy

A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis, than appear incontinence of urine, numbness in the right toes more than the left, and pain in the thighs and back. There have been some gradual fluctuations, but no clear, discrete episodes of deterioration. Surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Which of the following factors might be expected to worsen his condition?

a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine

Two weeks after recovering from a febrile illness associated with a productive cough, a 17-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (select 1 diagnosis):

a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d	*	Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease

A 54-year-old alcoholic man with profound agitation was treated with thiamine and intravenous fluids. His serum sodium is noted to be markedly depressed, and intravenous supplements are adjusted to rapidly correct this hyponatremia. He becomes acutely quadriplegic and unresponsive and dies within 24 h. (select 1 diagnosis):

a		Neuromyelitis optica (Devic's disease)
b	*	Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
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A 21-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Oligoclonal bands are the in CSF. The most likely diagnosis in this case is:

a		Seizure
b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis
e		Parkinson's disease

On briskly flexing the neck forward, a patient with MS disease may report:		
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b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain
A 20-year-old right-handed female student experienced a cold sensation in the left. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Past history includes an episode of optic neuritis in the left eye 2 years ago. One day, her left eye vision went out. In 1 week, her vision returned to normal. Her vision now is 20/MRI of her brain is normal. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. The CSF this persons with multiple sclerosis will typically exhibit:		
a		Glucose content of less than 20% of the serum content
b		Persistently elevated total protein content
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A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. During relapse of disease he received steroids at that time. He began interferon-1A 4 years ago. One year ago, he developed right leg weakness, constipation, and urinary urgency. He received steroids at that time as well. He now presents with new symptoms that concern him about the start of a new flare (decreased sensation in the palm of his right hand that is worse when he exercises, diminished sensation along the lower right trunk in the front and back). Examination findings include full visual fields with a left afferent pupillary defect. Hypoesthesia over roughly the T8 to T12 dermatomes. The most appropriate pharmacological treatment for this patient at this time is:		
a		Interferon-1B
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Past history of patient includes an episode of optic neuritis in the left eye 2 years ago. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The evoked response pattern that is most often abnormal in patients with early Multiply Sclerosis is the:		
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A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis, than appear incontinence of urine, numbness in the right toes more than the left, and pain in the thighs and back. Surgical clipping of the aneurysm 3 months ago failed to help his symptoms. Which of the following would be the most appropriate next diagnostic test?		
a		Cerebral angiography
b		Spinal angiography
c	*	MRI of the spinal cord
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e		VER
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a		Bright lights

b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine
A 25-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (select 1 diagnosis):		
a	*	Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness associated with a productive cough, a 29-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (select 1 diagnosis):		
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Two brothers, 5 and 8 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have abnormally low serum cortisol levels. (select 1 diagnosis):		
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b		Central pontine myelinolysis
c	*	Adrenoleukodystrophy
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irreglarly irregular heart beat. There is left side neglect with slurred speech. There is a weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Which of the following should be done next?		
a		Administer tissue plasminogen activator
b		Call a vascular surgery consult for possible endarterectomy
c	*	Order a brain CT
d		Order a cerebral angiogram
e		Start heparin
The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation
A pure motor stroke is most likely with damage to the:		
a	*	Internal capsule
b		Cerebellum
c		Putamen
d		Caudate
e		Amygdala
A pure sensory stroke is most likely with damage to the:		
a		Internal capsule

b	*	Thalamus
c		Hippocampus
d		Globus pallidus
e		Pons

A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?

a		Basilar artery tip aneurysm
b		Right lateral medullary infarction
c	*	Left lateral medullary infarction
d		Left medial medullary infarction
e		Right medial medullary infarction

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a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle

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a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Anterior spinal artery

A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:

a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension

A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced

emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe.The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	Cerebrospinal fluid (CSF) examination
b		Electroencephalography
c		Nerve conduction studies
d		Cardiac catheterization
e		HIV antibody testing
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it completely resolved. On the fourth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 min, but he had residual right-sided weakness for 24 h. CT scan was unchanged from that obtained on admission. The most appropriate treatment to institute involves:		
a		Heparin
b		Recombinant tissue plasminogen activator (r-TPA)
c	*	Phenytoin (anticonvulsant)
d		Warfarin
e		Aspirin
Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it completely resolved. On the fourth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 min, but he had residual right-sided weakness for 24 h. CT scan was unchanged from that obtained on admission. The focal weakness lasting for 24 h was most likely attributable to:		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd's paralysis
e		Hyponatremia
A 72-year-old woman has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of the:		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery
c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Left posterior inferior cerebellar artery (PICA)
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. This radiologic study is expected to reveal that the woman has:		

a		An arteriovenous malformation
b		An occipital astrocytoma
c		A sphenoidal meningioma
d		A pituitary adenoma
e	*	A saccular aneurysm
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. The radiologic study reveal that the woman has a saccular aneurysm. The cranial nerve injury likely to be responsible for all of these observations is one involving:		
a		The second cranial nerve
b	*	The third cranial nerve
c		The fourth cranial nerve
d		The sixth cranial nerve
e		None of the above
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. The radiologic study reveal that the woman has a saccular aneurysm. The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
a		Anterior communicating artery
b	*	Posterior communicating artery
c		Anterior cerebral artery
d		Middle cerebral artery
e		Posterior cerebral artery
Three days after developing neck stiffness and photophobia, the woman develops left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood and so would treat her with:		
a		Heparin
b		Warfarin
c	*	Nimodipine
d		Phenytoin
e		Carbamazepine
73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal.Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia

A thorough evaluation reveals that the patient has a 90% stenosis of the right internal carotid artery at the bifurcation. The management option most likely to prevent a future stroke is which of the following?		
a		Warfarin
b		Carotid artery angioplasty
c	*	Carotid endarterectomy
d		Extracranial-intracranial bypass
e		Aspirin
A 21-year-old right-handed female student was working in the photography lab 1 week ago, which required standing all day. After that, she experienced a cold sensation in the left foot and her entire left leg fell asleep. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Coughing, sneezing, and the Valsalva maneuver did not worsen her symptoms. She had a slight back pain, which she thought was due to using a poor mattress. Past history includes an episode of optic neuritis in the left eye 2 years ago. At that time, she was reportedly depressed and was sleeping constantly. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/She has not had a repeat episode since then. She had an MRI of her brain, which was normal at that time. She drinks alcohol occasionally and does not use any illicit drugs. Her only medication is birth control pills. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands.The most likely diagnosis in this case is:		
a		Seizure
b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis
e		Parkinson’s disease
See question Oligoclonal bands are the:		
a		Wave frequency changes on the EEG during sleep
b		Markings about the iris
c		Pathologic features of Alzheimer’s disease
d		Chromosomal markings found with multiple sclerosis (MS)
e	*	Immunoglobulin patterns in the CSF with MS
See question On briskly flexing the neck forward, a patient with this disease may report:		
a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		
a		Adrenoleukodystrophy
b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan’s disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern, and results in:		
a		Anencephaly
b		Microcephaly
c		Porencephaly
d	*	Macrocephaly
e		Dolichocephaly

A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis. He has recently had urge incontinence of urine. He also has numbness in the right toes more than the left, and pain in the thighs and back. There have been some gradual fluctuations, but no clear, discrete episodes of deterioration. He has had no disturbances of vision, eye movement, or motor control of the upper extremities. He was referred when surgical clipping of the aneurysm 3 months ago failed to help his symptoms.Which of the following would be the most appropriate next diagnostic test?		
a		Cerebral angiography
b		Spinal angiography
c	*	MRI of the spinal cord
d		Spinal cord biopsy
e		VER
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (select 1 diagnosis):		
a	*	Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness associated with a productive cough, a 19-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (select 1 diagnosis):		
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Two brothers, 4 and 7 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have abnormally low serum cortisol levels. (select 1 diagnosis):		
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movement, neck injury, incontinence, gait disturbance, diplopia, fever, chills, nausea, or vomiting. Examination findings include full visual fields with a left afferent pupillary defect. Bulk, strength, and tone are normal. Light touch is decreased over the left trunk and back over roughly the T8 to T12 dermatomes. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The most appropriate pharmacological treatment for this patient at this time is:		
a		Interferon-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole
See question Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The evoked response pattern that is most often abnormal in patients with early MS is the:		
a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test
A 37-year-old woman with progressive multiple sclerosis is being admitted for intravenous glucocorticoid therapy. She was diagnosed with multiple sclerosis 10 years ago after presenting with bilateral decreased visual acuity. She had an abnormal MRI at that time. She has been hospitalized approximately nine times since presentation, with her flares commonly consisting of increasing bilateral lower extremity weakness and decreased sensation manifested as a heavy feeling, waxing and waning generalized fatigue, bilateral hand tingling, and occasional nondescript speech changes that make her sound as though she has a slight accent. She has also had bilateral optic neuritis and one transient episode of aphasia in the past. She was last hospitalized 3 years ago. For the past 2 years she has been on cyclophosphamide and methylprednisolone, originally every 4 weeks, and now every 6 weeks, with the last treatment 1 month ago. She has tried and failed interferon therapy. For the 2 months prior to admission, the patient has had worsening bilateral lower extremity weakness/heaviness, increased fatigue, and mild low back numbness, as well as intermittent and alternating decreased hearing in both ears at work. She has also noticed mild unsteadiness walking. Included among her admission orders should be:		
a		Heart-healthy diet
b	*	Ranitidine 150 mg bid
c		Neurological checks every hour for the first 48 h
d		Placement of central venous line
e		Stat head CT for change in mental status
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		
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a		Bladder hypotonia
b		Large residual volume of urine

c	*	Premature bladder emptying
d		Good voluntary control of bladder emptying
e		Urinary tract infection
See question Three months later, the patient has worsening leg weakness. He has severe spasms of his legs bilaterally, and is increasingly unable to ambulate because of this. A reasonable symptomatic treatment option would be which of the following?		
a		Cyclophosphamide
b	*	Baclofen
c		Gabapentin
d		Amitriptyline hydrochloride
e		Propranolol
See question Which of the following factors might be expected to worsen his condition?		
a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
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a		Bright lights
b		Red wine
c		Tyramine-containing compounds

d	*	Hot weather
e		Amantadine
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a		Seizure
b		Transient ischemic attack
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See question Oligoclonal bands are the:		
a		Wave frequency changes on the EEG during sleep
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c		Pathologic features of Alzheimer's disease
d		Chromosomal markings found with multiple sclerosis (MS)
e	*	Immunoglobulin patterns in the CSF with MS
See question On briskly flexing the neck forward, a patient with this disease may report:		
a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop

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b		Multiple sclerosis
c		Subacute sclerosing panencephalitis (SSPE)
d	*	Progressive multifocal leukoencephalopathy (PML)
e		Metachromatic leukodystrophy
A 3-month-old child has a rapid regression of psychomotor function and loss of sight. There is increased urinary excretion of *N*-acetyl-L-aspartic acid. A preliminary diagnosis of Canavan's disease (Canavan-van Bogaert-Bertrand disease; spongy degeneration of infancy) is made. This is a demyelinating disease that produces retardation in infants, is inherited in an autosomal recessive pattern, and results in:		
a		Anencephaly
b		Microcephaly
c		Porencephaly
d	*	Macrocephaly
e		Dolichocephaly
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A 54-year-old alcoholic man is brought to the emergency room with profound agitation. He is believed to be suffering from delirium tremens and is treated with thiamine and intravenous fluids. His serum sodium is noted to be markedly depressed, and intravenous supplements are adjusted to rapidly correct this hyponatremia. He becomes acutely quadriplegic and unresponsive and dies within 24 h. (Select 1 diagnosis):		
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a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test
A 37-year-old woman with progressive multiple sclerosis is being admitted for intravenous glucocorticoid therapy. She was diagnosed with multiple sclerosis 10 years ago after presenting with bilateral decreased visual acuity. She had an abnormal MRI at that time. She has been hospitalized approximately nine times since presentation, with her flares commonly consisting of increasing bilateral lower extremity weakness and decreased sensation manifested as a heavy feeling, waxing and waning generalized fatigue, bilateral hand tingling, and occasional nondescript speech changes that make her sound as though she has a slight accent. She has also had bilateral optic neuritis and one transient episode of aphasia in the past. She was last hospitalized 3 years ago. For the past 2 years she has been on cyclophosphamide and methylprednisolone, originally every 4 weeks, and now every 6 weeks, with the last treatment 1 month ago. She has tried and failed interferon therapy. For the 2 months prior to admission, the patient has had worsening bilateral lower extremity weakness/heaviness, increased fatigue, and mild low back numbness, as well as intermittent and alternating decreased hearing in both ears at work. She has also noticed mild unsteadiness walking. Included among her admission orders should be:		
a		Heart-healthy diet
b	*	Ranitidine 150 mg bid
c		Neurological checks every hour for the first 48 h

d		Placement of central venous line
e		Stat head CT for change in mental status
A 29-year-old man contracted HIV-1 through homosexual activity 5 years ago. He had been doing well on HAART, but stopped taking his medications 8 months ago because he thought that he would be better off. Two months ago he was successfully treated for *Pneumocystis carinii* pneumonia. A papovavirus infection of the central nervous system (CNS) in this person would be most likely to produce:		
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a		Bladder hypotonia
b		Large residual volume of urine
c	*	Premature bladder emptying
d		Good voluntary control of bladder emptying
e		Urinary tract infection
See question Three months later, the patient has worsening leg weakness. He has severe spasms of his legs bilaterally, and is increasingly unable to ambulate because of this. A reasonable symptomatic treatment option would be which of the following?		
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d		Amitriptyline hydrochloride
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a		Glucose content of less than 20% of the serum content
b		Persistently elevated total protein content
c	*	Persistently elevated immunoglobulin G (IgG) content
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d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 21-year-old right-handed female student was working in the photography lab 1 week ago, which required standing all day. After that, she experienced a cold sensation in the left foot and her entire left leg fell asleep. The feeling lasted 4 to 5 days and then slowly went away. Her right lower extremity was fine. Coughing, sneezing, and the Valsalva maneuver did not worsen her symptoms. She had a slight back pain, which she thought was due to using a poor mattress. Past history includes an episode of optic neuritis in the left eye 2 years ago. At that time, she was reportedly depressed and was sleeping constantly. One day, her left eye became blurred and her vision went out. In 1 week, her vision returned to normal. Her vision now is 20/She has not had a repeat episode since then. She had an MRI of her brain, which was normal at that time. She drinks alcohol occasionally and does not use any illicit drugs. Her only medication is birth control pills. Examination is significant for brisk reflexes and sustained clonus at the right ankle. Babinski sign is present on the right. Testing is positive for oligoclonal bands. The most likely diagnosis in this case is:		
a		Seizure
b		Transient ischemic attack
c		Anaplastic astrocytoma
d	*	Multiple sclerosis
e		Parkinson's disease
See question On briskly flexing the neck forward, a patient with this disease may report:		
a		Dystonic posturing of the legs
b	*	An electrical sensation radiating down the spine or into the legs
c		Bilateral wristdrop
d		Spontaneous evacuation of the bladder and bilateral extensor plantar responses
e		Rapidly evolving hemifacial pain
See question The CSF in persons with multiple sclerosis will typically exhibit:		
a		Glucose content of less than 20% of the serum content
b		Persistently elevated total protein content
c	*	Persistently elevated immunoglobulin G (IgG) content
d		Mononuclear cell counts of greater than 100 cells per/L
e		Erythrocyte counts of greater than 10 cells per/L
A 35-year-old man with multiple sclerosis initially presented 4 years ago with left eye optic neuritis. He did not receive steroids at that time. Two years ago he had loss of sensation in his hands that progressed over weeks to motor involvement, limiting his ability to write with the left hand. He received steroids at that time. He began interferon □-1A 4 years ago. One year ago, he developed right leg weakness, constipation, and urinary urgency. He received steroids at that time as well. He now presents with new symptoms that concern him about the start of a new flare. Two days ago, he noticed decreased sensation in the palm of his right hand that is worse when he exercises. This has gotten a little worse over the last 2 days. Yesterday, he noticed diminished sensation along the lower right trunk in the front and back. He has no pain, tingling, exacerbation of symptoms with neck movement, neck injury, incontinence, gait disturbance, diplopia, fever, chills, nausea, or vomiting. Examination findings include full visual fields with a left afferent pupillary defect. Bulk, strength, and tone are normal. Light touch is decreased over the left trunk and back over roughly the T8 to T12 dermatomes. Finger tapping, rapid alternating movements, finger-nose-finger, and heel tapping to shin are normal. The most appropriate pharmacological treatment for this patient at this time is:		
a		Interferon-1B
b	*	Corticosteroids
c		Gabapentin
d		Glatiramer
e		Pramipexole
See question The evoked response pattern that is most often abnormal in patients with early MS is the:		

a		Brainstem auditory evoked response (BAER)
b		Far-field somatosensory evoked response (SSER)
c	*	Visual evoked response (VER)
d		Jolly test
e		Sensory nerve conduction test
A 58-year-old man with a basilar tip aneurysm is referred by a neurosurgeon. He has a 4-year history of progressive spastic paraparesis. He has recently had urge incontinence of urine. He also has numbness in the right toes more than the left, and pain in the thighs and back. There have been some gradual fluctuations, but no clear, discrete episodes of deterioration. He has had no disturbances of vision, eye movement, or motor control of the upper extremities. He was referred when surgical clipping of the aneurysm 3 months ago failed to help his symptoms.Which of the following would be the most appropriate next diagnostic test?		
a		Cerebral angiography
b		Spinal angiography
c	*	MRI of the spinal cord
d		Spinal cord biopsy
e		VER
See question Which of the following factors might be expected to worsen his condition?		
a		Bright lights
b		Red wine
c		Tyramine-containing compounds
d	*	Hot weather
e		Amantadine
A 23-year-old woman awakens with bilateral leg weakness and numbness, urinary retention, and impaired bowel control. She has had several episodes of blurred vision over the previous 2 years, but these had always been attributed to idiopathic papillitis. (Select 1 diagnosis):		
a	*	Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two weeks after recovering from a febrile illness associated with a productive cough, a 19-year-old man complains of headache and neck stiffness. These complaints are associated with fever and are soon followed by deteriorating cognitive function. He becomes disoriented, lethargic, and increasingly unresponsive. MRI reveals widespread damage to the white matter of the cerebral hemispheres. (Select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c		Marchiafava-Bignami disease
d	*	Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
Two brothers, 4 and 7 years of age, exhibit limb ataxia, nystagmus, and mental retardation. MRI of their brains reveals areas of abnormal signal in the white matter. Cerebellar involvement is substantial. Both boys also have abnormally low serum cortisol levels. (Select 1 diagnosis):		
a		Neuromyelitis optica (Devic's disease)
b		Central pontine myelinolysis
c	*	Adrenoleukodystrophy
d		Acute disseminated encephalomyelitis
e		Pelizaeus-Merzbacher disease
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irreglarly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower		

extremity. Routine chemistries and cell counts are normal. Her INR is Which of the following should be done next?		
a		Administer tissue plasminogen activator
b		Call a vascular surgery consult for possible endarterectomy
c	*	Order a brain CT
d		Order a cerebral angiogram
e		Start heparin
See question The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation
See question A pure motor stroke is most likely with damage to the:		
a		Internal capsule
b		Cerebellum
c		Putamen
d		Caudate
e		Amygdala
See question A pure sensory stroke is most likely with damage to the:		
a	*	Internal capsule
b		Thalamus
c		Hippocampus
d		Globus pallidus
e		Pons
A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a		Basilar artery tip aneurysm
b		Right lateral medullary infarction
c	*	Left lateral medullary infarction
d		Left medial medullary infarction
e		Right medial medullary infarction
See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
See question Occlusion of which of the following arteries typically produces this syndrome?		
a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Anterior spinal artery
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of		

hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	Cerebrospinal fluid (CSF) examination
b		Electroencephalography
c		Nerve conduction studies
d		Cardiac catheterization
e		HIV antibody testing
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it completely resolved. On the fourth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 min, but he had residual right-sided weakness for 24 h. CT scan was unchanged from that obtained on admission. The most appropriate treatment to institute involves:		
a		Heparin
b		Recombinant tissue plasminogen activator (r-TPA)
c	*	Phenytoin (anticonvulsant)
d		Warfarin
e		Aspirin
See question The focal weakness lasting for 24 h was most likely attributable to:		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd's paralysis
e		Hyponatremia
A 72-year-old woman has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of the:		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery
c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Left posterior inferior cerebellar artery (PICA)
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double		

vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. This radiologic study is expected to reveal that the woman has:		
a		An arteriovenous malformation
b		An occipital astrocytoma
c		A sphenoidal meningioma
d		A pituitary adenoma
e	*	A saccular aneurysm
See question The cranial nerve injury likely to be responsible for all of these observations is one involving:		
a		The second cranial nerve
b	*	The third cranial nerve
c		The fourth cranial nerve
d		The sixth cranial nerve
e		None of the above
See question The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
a		Anterior communicating artery
b	*	Posterior communicating artery
c		Anterior cerebral artery
d		Middle cerebral artery
e		Posterior cerebral artery
Three days after developing neck stiffness and photophobia, the woman develops left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood and so would treat her with:		
a		Heparin
b		Warfarin
c	*	Nimodipine
d		Phenytoin
e		Carbamazepine
73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
A thorough evaluation reveals that the patient has a 90% stenosis of the right internal carotid artery at the bifurcation. The management option most likely to prevent a future stroke is which of the following?		
a		Warfarin
b		Carotid artery angioplasty
c	*	Carotid endarterectomy
d		Extracranial-intracranial bypass

e		Aspirin
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
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A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail:		
a		Broca's aphasia
b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Anomic aphasia

e	*	Global aphasia
A 45-year-old woman with chronic atrial fibrillation discontinues warfarin treatment and abruptly develops problems with language comprehension. She is able to produce some intelligible phrases and produces sound quite fluently; however, she is unable to follow simple instructions or to repeat simple phrases. On attempting to write, she becomes very frustrated and agitated. Emergency MRI reveals a lesion of the left temporal lobe that extends into the superior temporal gyrus:		
a		Broca's aphasia
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d		Transcortical motor aphasia
e		Anomic aphasia
A 71-year-old man develops headache and slight difficulty speaking while having sexual intercourse. He has a long-standing history of hypertension, but has been on medication for more than 7 years. He makes frequent errors in finding words and follows complex commands somewhat inconsistently. The most obvious defect in his language function is his inability to repeat the simplest of phrases without making repeated errors. An emergency CT scan reveals an intracerebral hemorrhage in the left parietal lobe that appears to communicate with the lateral ventricle:		
a		Anomic aphasia
b		Global aphasia
c	*	Conduction aphasia
d		Mixed transcortical aphasia
e		Transcortical sensory aphasia
A 24-year-old woman abruptly loses all speech during the third trimester of an otherwise uncomplicated pregnancy. She has a history of severe migraines during which she occasionally develops a transient right hemiplegia. Her comprehension is good, and she is frustrated by her inability to speak or write. She is unable to repeat simple phrases, but she does begin to produce simple words within 5 days of the acute disturbance of language:		
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b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e		Anomic aphasia
A 78-year-old man suffers a cardiac arrest while being treated in an emergency room for chest pain. Resuscitation is initiated immediately, but profound hypotension is observed for at least 20 min. A cardiac rhythm is restored, but the patient remains unconscious for the next 3 days. When he is awake, alert, and extubated, his speech is limited to repetition of words and sounds produced by those around him. He has no apparent comprehension of language and produces few sounds spontaneously. Whenever the patient is spoken to, he fairly accurately repeats what was said to him:		
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d		Transcortical motor aphasia
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A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a		Basilar artery tip aneurysm
b		Right lateral medullary infarction
c	*	Left lateral medullary infarction

d		Left medial medullary infarction
e		Right medial medullary infarction
See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
See question Occlusion of which of the following arteries typically produces this:		
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d		Undiagnosed hypertension
e		Brain tumor
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c		Nerve conduction studies
d		Cardiac catheterization
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The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
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a		Heparin
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See question The focal weakness lasting for 24 h was most likely attributable to:		
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d		Transcortical motor aphasia
e	*	Mixed transcortical aphasia
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irreglarly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is Which of the following should be done next?		
a		Administer tissue plasminogen activator
b		Call a vascular surgery consult for possible endarterectomy
c	*	Order a brain CT
d		Order a cerebral angiogram
e		Start heparin
See question The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation
A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a		Basilar artery tip aneurysm
b		Right lateral medullary infarction
c	*	Left lateral medullary infarction
d		Left medial medullary infarction
e		Right medial medullary infarction
See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus

d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
See question Occlusion of which of the following arteries typically produces thissyndrome?		
a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Anterior spinal artery
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
See question The focal weakness lasting for 24 h was most likely attributable to:		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd's paralysis
e		Hyponatremia
A 72-year-old woman has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of the:		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery
c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Left posterior inferior cerebellar artery (PICA)
See question The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
a		Anterior communicating artery
b	*	Posterior communicating artery
c		Anterior cerebral artery
d		Middle cerebral artery
e		Posterior cerebral artery
Three days after developing neck stiffness and photophobia, the woman develops left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood and so would treat her with:		
a		Heparin
b		Warfarin
c	*	Nimodipine
d		Phenytoin
e		Carbamazepine
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irreglarly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is Which of the following should be done next? A pure motor stroke is most likely with damage to the:		
a	*	Internal capsule

b		Cerebellum
c		Caudate
d		Amygdala
e		Nothing
See question A pure sensory stroke is most likely with damage to the:		
a		Internal capsule
b	*	Thalamus
c		Hippocampus
d		Pons
e		Internal capsule
See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
See question Occlusion of which of the following arteries typically produces this syndrome?		
a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Nothing
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is a. HIV antibody testing:		
a	*	Cerebrospinal fluid (CSF) examination
b		Electroencephalography
c		Nerve conduction studies
d		Cardiac catheterization
e		Nothing
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. This radiologic study is expected to reveal that the woman has:		
a		An occipital astrocytoma
b		A sphenoidal meningioma

c		A pituitary adenoma
d	*	A saccular aneurysm
e		Nothing
See question The cranial nerve injury likely to be responsible for all of these observations is one involving:		
a		The second cranial nerve
b	*	The third cranial nerve
c		The fourth cranial nerve
d		None of the above
e		Nothing
73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The perivenular space
e		Cortex
Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it completely resolved. On the fourth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 min, but he had residual right-sided weakness for 24 h. CT scan was unchanged from that obtained on admission. The most appropriate treatment to institute involves:		
a		Heparin
b		Recombinant tissue plasminogen activator (r-TPA)
c	*	Phenytoin (anticonvulsant)
d		Warfarin
e		Aspirin
See question The focal weakness lasting for 24 h was most likely attributable to:		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd's paralysis
e		Hyponatremia
A 72-year-old woman has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of the:		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery

c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Right middle cerebral artery
See question The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
a		Anterior communicating artery
b	*	Posterior communicating artery
c		Anterior cerebral artery
d		Middle cerebral artery
e		Posterior cerebral artery
Three days after developing neck stiffness and photophobia, the woman develops left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood and so would treat her with:		
a		Heparin
b		Warfarin
c	*	Nimodipine
d		Phenytoin
e		Aspirin
A thorough evaluation reveals that the patient has a 90% stenosis of the right internal carotid artery at the bifurcation. The management option most likely to prevent a future stroke is which of the following?		
a		Warfarin
b		Carotid artery angioplasty
c	*	Carotid endarterectomy
d		Aspirin
e		Heparin
A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail:		
a		Broca's aphasia
b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Anomic aphasia
e	*	Global aphasia
A 24-year-old woman abruptly loses all speech during the third trimester of an otherwise uncomplicated pregnancy. She has a history of severe migraines during which she occasionally develops a transient right hemiplegia. Her comprehension is good, and she is frustrated by her inability to speak or write. She is unable to repeat simple phrases, but she does begin to produce simple words within 5 days of the acute disturbance of language:		
a	*	Broca's aphasia
b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Anomic aphasia
e		Conductive aphasia
A 78-year-old man suffers a cardiac arrest while being treated in an emergency room for chest pain. Resuscitation is initiated immediately, but profound hypotension is observed for at least 20 min. A cardiac rhythm is restored, but the patient remains unconscious for the next 3 days. When he is awake, alert, and extubated, his speech is limited to repetition of words and sounds produced by those around him. He has no apparent comprehension of language and produces few sounds spontaneously. Whenever the patient is spoken to, he fairly accurately repeats what was said to him:		
a		Broca's aphasia
b	*	Wernicke's aphasia
c		Transcortical sensory aphasia
d		Transcortical sensory aphasia

e		Anomic aphasia
A 61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Occlusion of which of the following arteries typically produces this syndrome?		
a		Basilar artery
b	*	Vertebral artery
c		Superior cerebellar artery
d		Anterior inferior cerebellar artery (AICA)
e		Anterior spinal artery
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	Cerebrospinal fluid (CSF) examination
b		Electroencephalography
c		Nerve conduction studies
d		Cardiac catheterization
e		HIV antibody testing
Within 1 day of admission, the patient's right-sided weakness began to abate, and within 1 week it completely resolved. On the fourth day of hospitalization, the patient abruptly lost consciousness and exhibited clonic movements starting in his right side and generalizing to his left side. The movements stopped within 3 min, but he had residual right-sided weakness for 24 h. CT scan was unchanged from that obtained on admission. The most appropriate treatment to institute involves:		
a		Heparin
b		Recombinant tissue plasminogen activator (r-TPA)
c	*	Phenytoin (anticonvulsant)
d		Warfarin
e		Aspirin
A 72-year-old woman has the abrupt onset of right face and hand weakness, disturbed speech production, and a right homonymous hemianopsia. This is most likely attributable to occlusion of the:		
a	*	Left middle cerebral artery
b		Left anterior cerebral artery
c		Left vertebrobasilar artery
d		Right anterior choroidal artery
e		Left posterior inferior cerebellar artery (PICA)
See question The cranial nerve injury likely to be responsible for all of these observations is one involving:		
a		The second cranial nerve
b	*	The third cranial nerve
c		The fourth cranial nerve
d		The sixth cranial nerve
e		None of the above
Three days after developing neck stiffness and photophobia, the woman develops left-sided weakness and hyperreflexia. Her left plantar response is upgoing. Her physician presumes that these deficits are a delayed effect of the subarachnoid blood and so would treat her with:		
a		Heparin
b		Warfarin

c	*	Nimodipine
d		Phenytoin
e		Carbamazepine
See question The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail:		
a		Broca's aphasia
b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Anomic aphasia
e	*	Global aphasia
A 71-year-old man develops headache and slight difficulty speaking while having sexual intercourse. He has a long-standing history of hypertension, but has been on medication for more than 7 years. He makes frequent errors in finding words and follows complex commands somewhat inconsistently. The most obvious defect in his language function is his inability to repeat the simplest of phrases without making repeated errors. An emergency CT scan reveals an intracerebral hemorrhage in the left parietal lobe that appears to communicate with the lateral ventricle:		
a		Anomic aphasia
b		Global aphasia
c	*	Conduction aphasia
d		Mixed transcortical aphasia
e		Transcortical sensory aphasia
A 78-year-old man suffers a cardiac arrest while being treated in an emergency room for chest pain. Resuscitation is initiated immediately, but profound hypotension is observed for at least 20 min. A cardiac rhythm is restored, but the patient remains unconscious for the next 3 days. When he is awake, alert, and extubated, his speech is limited to repetition of words and sounds produced by those around him. He has no apparent comprehension of language and produces few sounds spontaneously. Whenever the patient is spoken to, he fairly accurately repeats what was said to him:		
a		Broca's aphasia
b		Wernicke's aphasia
c		Transcortical sensory aphasia
d		Transcortical motor aphasia
e	*	Mixed transcortical aphasia
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irreglarly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation

See question A pure sensory stroke is most likely with damage to the:		
a		Internal capsule
b	*	Thalamus
c		Hippocampus
d		Globus pallidus
e		Pons
See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitarius
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguus
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension
The patient's HIV antigen test is positive, but he has no depression of his CD4 (helper) T lymphocyte count. Nerve conduction studies reveal generalized slowing in the legs, and EEG exhibits depressed voltage over the left parietal lobe. Cardiac catheterization suggests aortic valve disease, and his CSF is xanthochromic (yellow). The probable site of injury in the CNS is:		
a	*	An arterial wall
b		The ventricular endothelium
c		The pia arachnoid
d		The dura mater
e		The perivenular space
See question The focal weakness lasting for 24 h was most likely attributable to:		
a		Intracerebral hemorrhage
b		Subarachnoid hemorrhage
c		Encephalitis
d	*	Todd's paralysis
e		Hyponatremia
A 39-year-old woman has diplopia several times a day for 6 weeks. She consults a physician when the double vision becomes unremitting, and also complains of dull pain behind her right eye. When a red glass is placed over her right eye and she is asked to look at a flashlight off to her left, she reports seeing a white light and a red light. The red light appears to her to be more to the left than the white light. Her right pupil is more dilated than her left pupil and responds less briskly to a bright light directed at it than does the left pupil. Before any further investigations can be performed, the woman develops the worst headache of her life and becomes stuporous. Her physician discovers that she has marked neck stiffness and photophobia. The physician performs a transfemoral angiogram. This radiologic study is expected to reveal that the woman has:		
a		An arteriovenous malformation
b		An occipital astrocytoma
c		A sphenoidal meningioma
d		A pituitary adenoma
e	*	A saccular aneurysm
The site of the lesion responsible for this woman's symptoms and signs is most probably the:		
a		Anterior communicating artery
b	*	Posterior communicating artery

c		Anterior cerebral artery
d		Middle cerebral artery
e		Posterior cerebral artery
73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
A thorough evaluation reveals that the patient has a 90% stenosis of the right internal carotid artery at the bifurcation. The management option most likely to prevent a future stroke is which of the following?		
a		Warfarin
b		Carotid artery angioplasty
c	*	Carotid endarterectomy
d		Extracranial-intracranial bypass
e		Aspirin
The most striking neurologic complication of von Economo's encephalitis (encephalitis lethargica), a type of encephalitis that occurred in epidemic proportions along with viral influenza between 1917 and 1928, was:		
a		Blindness
b		Hearing loss
c		Paraplegia
d	*	Parkinsonism
e		Hemiparesis
A 35-year-old woman who has received a liver transplant develops meningeal signs and fever. Cerebrospinal fluid testing reveals a fungal infection. The most common cause of fungal meningitis is:		
a		Aspergillus
b		Candida
c		Mucor
d	*	Cryptococcus
e		Rhizopus
A 17-year-old right-handed boy has had infectious meningitis 8 times over the past 3 years. He has otherwise been generally healthy and developed normally. Recurrent meningitis often develops in persons with:		
a		Otitis media
b		Epilepsy
c		Multiple sclerosis
d	*	Cerebrospinal fluid (CSF) leaks
e		Whipple's disease
A 31-year-old homosexual man has had headache, sleepiness, and poor balance that have worsened over the past week. The patient is known to be HIV-seropositive, but has done well in the past and has not seen a doctor in over 1 year. On examination, his responses are slow and he has some difficulty sustaining attention. He has a right hemiparesis with increased reflexes on the right. Routine cell counts and chemistries are normal. Of the following, which is the most appropriate thing to do next?		
a	*	Get a head CT with contrast
b		Get a noncontrast head CT
c		Perform a lumbar puncture
d		Start antiretroviral therapy
e		Start intravenous heparin
See question A CT scan reveals several rim-enhancing lesions with minimal mass effect. An appropriate investigation at this point would be to:		
a		Get a cerebral angiogram

b		Order a ventricular cerebrospinal fluid (CSF) aspiration
c	*	Perform a lumbar puncture and include cerebrospinal fluid for Epstein-Barr virus (EBV) PCR in tests ordered
d		Stop all antiretroviral therapy
e		Treat with intravenous acyclovir
A 72-year-old right-handed woman has 2 days of headache and fever, followed by worsening confusion. She is taken to the hospital after having a generalized seizure. A head CT is consistent with left temporal hemorrhage and swelling. Localization of an encephalitis to the medial temporal or orbital frontal regions of the brain is most consistent with:		
a		Treponema pallidum
b		Varicella zoster virus
c	*	Herpes simplex virus
d		Cryptococcus neoformans
e		Toxoplasma gondii
See question Neuroimaging of the brain before attempting a lumbar puncture is advisable in cases of acute encephalitis because:		
a		The diagnosis may be evident on the basis of magnetic resonance imaging (MRI) alone
b	*	Massive edema in the temporal lobe may make herniation imminent
c		The computed tomography (CT) picture may determine whether a brain biopsy should be obtained
d		It may establish what pathology is responsible
e		It may establish what pathology is responsible
See question CSF testing establishes this case as being the commonest form of acute encephalitis. The CSF changes late in the course of this disease typically include:		
a	*	An increased number of lymphocytes
b		A glucose content of less than two-thirds the serum level
c		A protein content of less than 45 mg/dL
d		A normal opening pressure
e		A predominance of polymorphonuclear white blood cells
A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis.This condition is usually acquired through:		
a	*	Freshwater swimming
b		Eating contaminated meat
c		Eating calves' brains
d		Anal intercourse
e		Animal bites
See question Both HIV and cytomegalovirus infections in the brain characteristically produce:		
a		Senile plaques
b		Intraneuronal amyloid
c		Intranuclear inclusions
d		Intracytoplasmic inclusions
e	*	Microglial nodules
Following several days of low-grade fever and mild neck and head pain, a 10-year-old boy develops bilateral face drooping and difficulty fully closing his eyes. Serum is positive for Borrelia burgdorferi IgM. CSF PCR is also positive for this organism's DNA. The medication most appropriate in patients with CNS involvement by B. burgdorferi is:		
a		Streptomycin
b	*	Ceftriaxone
c		Gentamicin
d		Isoniazid
e		Rifampin
The most common complaint in patients with brain abscess is:		
a		Nausea and vomiting

b		Ataxia
c	*	Headache
d		Neck stiffness
e		Seizures
A 55-year-old woman has a progressive dementia over the past year. Over the last 3 months she has also developed dysarthria, myoclonus, intention tremor, and hyperreflexia. CSF VDRL is positive. This patient's symptoms are being caused by which of the following?		
a		A response to penicillin treatment
b		An autoimmune reaction
c		An acute meningoencephalitis
d	*	A chronic meningoencephalitis
e		A chronic rhombencephalitis
A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis.This condition is usually acquired through:		
a	*	Freshwater swimming
b		Eating contaminated meat
c		Eating calves' brains
d		Anal intercourse
e		Animal bites
A 10-year-old girl is referred to a physician because of rapidly deteriorating school performance. Over the course of a few weeks, the child has lost interest in her schoolwork, appeared apathetic at home, and had frequent temper tantrums with little provocation. A psychiatric evaluation reveals that, in addition to emotional lability, the child has substantial intellectual deficits that appear to be new. Within 1 month of this evaluation, the child has a generalized tonic-clonic seizure. A neurologist examining the child discovers chorioretinitis, ataxia, hyperactive reflexes, and bilateral Babinski signs. Her EEG exhibits periodic bursts of high-voltage slow waves, followed by recurrent low-voltage stretches (burst suppression pattern). The CSF is remarkable for an increase in the gamma globulin fraction. The child becomes increasingly lethargic and obtunded over the ensuing 2 months. She remains in a coma for several months before dying. (select 1 condition):		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b	*	Subacute sclerosing panencephalitis (SSPE)
c		Progressive multifocal leukoencephalopathy (PML)
d		Rabies encephalitis
e		Bartonella henselae encephalitis
A 37-year-old female Navy officer presents with 3 days of confusion and seizures. Her colleagues report that she has been acting strangely for 3 days. This is followed by generalized status epilepticus. The woman has previously been well. She has traveled to the Caribbean several times annually, and she has a new pet cat. General exam discloses epitrochlear lymphadenopathy. Neurologic exam shows the woman to be in status epilepticus. Cerebrospinal fluid is negative; MRI shows increased signal in the pulvinar bilaterally. (select 1 condition):		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b	*	Bartonella henselae encephalitis
c		Progressive multifocal leukoencephalopathy (PML)
d		Rabies encephalitis.
e		Parkinsonism
The most striking neurologic complication of von Economo's encephalitis (encephalitis lethargica), a type of encephalitis that occurred in epidemic proportions along with viral influenza between 1917 and 1928, was:		
a		Blindness
b		Hearing loss
c		Paraplegia
d	*	Parkinsonism
e		Incontinence
A 35-year-old woman who has received a liver transplant develops meningeal signs and fever. Cerebrospinal		

fluid testing reveals a fungal infection. The most common cause of fungal meningitis is:		
a		Aspergillus
b		Candida
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e		Toxoplasma gondii
A 17-year-old right-handed boy has had infectious meningitis 8 times over the past 3 years. He has otherwise been generally healthy and developed normally. Recurrent meningitis often develops in persons with:		
a		Otitis media
b		Epilepsy
c		Multiple sclerosis
d		Whipple's disease
e	*	Cerebrospinal fluid (CSF) leaks
The most common site for abscess formation in the brain is the:		
a		Putamen
b		Thalamus
c		Head of the caudate
d	*	Gray-white junction
e		Subthalamus
Among below mentioned types of meningitis choose the one that causes serous changes of the cerebrospinal liquid:		
a	*	Viral
b		Pneumococcal
c		Streptococcal
d		Staphylococcal
e		Meningococcal
In the case of tuberculous meningitis, the cerebrospinal liquid becomes:		
a		Festering
b		Turbid
c		Normal pressure
d		Bloody
e	*	Opalescent
The presence of this syndrome is decisive in diagnosing meningitis:		
a		Meningial syndrome
b		The presence of focal neurological symptoms
c		The presence of generally-cerebral symptoms
d	*	The syndrome of inflammatory changes in the liquor
e		The syndrome of infectious disease
A 31-year-old homosexual man has had headache, sleepiness, and poor balance that have worsened over the past week. The patient is known to be HIV-seropositive, but has done well in the past and has not seen a doctor in over 1 year. On examination, his responses are slow and he has some difficulty sustaining attention. He has a right hemiparesis with increased reflexes on the right. Routine cell counts and chemistries are normal. Of the following, which is the most appropriate thing to do next?		
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b		Get a noncontrast head CT
c		Perform a lumbar puncture
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e		Start intravenous heparin
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e		Treat with intravenous acyclovir
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See question Neuroimaging of the brain before attempting a lumbar puncture is advisable in cases of acute encephalitis because:		
a		The diagnosis may be evident on the basis of magnetic resonance imaging (MRI) alone
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b		A glucose content of less than two-thirds the serum level
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e		A predominance of polymorphonuclear white blood cells
Typical clinical forms of acute period of lethargic encephalitis:		
a		Meningeal
b		Bulbar
c		Oculo- lethargic
d		Polyneuritic
e	*	Polymyelitic
Tick the syndrome which is typical for chronical stage of lethargic encephalitis:		
a		Argyll Robertson syndrom
b		Parinaud's Syndrome
c		Bernard-Horner syndrome
d		Meningeal
e	*	Parkinsonism
How the pyogenic infections reach the intracranial structures?		
a		Hematogenous spread
b		Extension from cranial structures
c		Iatrogenic, in the course of surgery
d		Nosocomial, i.e., acquired in-hospital
e	*	All mentioned
In the adult the most common pathogenic organisms that causes meningitis are:		
a		Pneumococcus (Streptococcus pneumoniae)
b		Meningococcus (Neisseria meningitides)
c		Haemophilus influenzae
d		Listeria monocytogenes
e	*	All mentioned
The most common pathogenic organisms that causes meningitis in the neonate are:		

a	*	Escherichia coli and group B streptococcus
b		Meningococcus (Neisseria meningitides)
c		Haemophilus influenzae
d		Listeria monocytogenes
e		All mentioned
The early clinical effects of acute bacterial meningitis are:		
a		Fever and severe headache
b		Stiffness of the neck
c		Generalized convulsions
d		Disorder of consciousness
e	*	All mentioned
Brudzinski sign is:		
a	*	Flexion at the hip and knee in response to forward flexion of the neck
b		Inability to completely extend the legs
c		Spastic paraparesis with sensory loss in the lower segments of the body
d		Impairment of consciousness
e		All mentioned
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c		Meropenem
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e		Azithromycin
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The most striking neurologic complication of von Economo’s encephalitis (encephalitis lethargica), a type of encephalitis that occurred in epidemic proportions along with viral influenza between 1917 and 1928, was:		
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b		Hearing loss
c		Paraplegia
d	*	Parkinsonism
e		Hemiparesis
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A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis.This condition is usually acquired through:		
a	*	Freshwater swimming
b		Eating contaminated meat
c		Eating calves' brains
d		Anal intercourse
e		Animal bites
A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis. Both HIV and cytomegalovirus infections in the brain characteristically produce:		
a		Senile plaques
b		Intraneuronal amyloid
c		Intranuclear inclusions
d		Intracytoplasmic inclusions
e	*	Microglial nodules
How the pyogenic infections reach the intracranial structures?		
a		Hematogenous spread
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d	*	Cerebrospinal fluid (CSF) leaks
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Brudzinski sign is:		
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d		Impairment of consciousness
e		All mentioned
The most common complaint in patients with brain abscess is:		
a		Nausea and vomiting
b		Ataxia
c	*	Headache
d		Neck stiffness
e		Seizures
A 72-year-old right-handed woman has 2 days of headache and fever, followed by worsening confusion. She is taken to the hospital after having a generalized seizure. A head CT is consistent with left temporal hemorrhage and swelling.Localization of an encephalitis to the medial temporal or orbital frontal regions of the brain is most consistent with:		

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c		A protein content of less than 45 mg/dL
d		A normal opening pressure
e		A predominance of polymorphonuclear white blood cells
The cranial neuropathy most commonly found with Lyme disease isthat associated with damage to cranial nerve:		
a		III
b		V
c	*	VII
d		IX
e		XII
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a		Senile plaques
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c		Intranuclear inclusions
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e	*	Microglial nodules
Following several days of low-grade fever and mild neck and head pain, a 10-year-old boy develops bilateral face drooping and difficulty fully closing his eyes. Serum is positive for Borrelia burgdorferi IgM. CSF PCR is also positive for this organism’s DNA. The medication most appropriate in patients with CNS involvement by B. burgdorferi is:		
a		Streptomycin
b	*	Ceftriaxone
c		Gentamicin
d		Isoniazid
e		Rifampin
The most common complaint in patients with brain abscess is:		
a		Nausea and vomiting
b		Ataxia
c	*	Headache
d		Neck stiffness
e		Seizures
A 55-year-old woman has a progressive dementia over the past year. Over the last 3 months she has also developed dysarthria, myoclonus, intention tremor, and hyperreflexia. CSF VDRL is positive. This patient’s symptoms are being caused by which of the following?		

a		A response to penicillin treatment
b		An autoimmune reaction
c		An acute meningoencephalitis
d	*	A chronic meningoencephalitis
e		A chronic rhombencephalitis
A 13-year-old boy is brought into the emergency room lethargic with a stiff neck and fever. Despite aggressive therapy, the child dies. Postmortem evaluation reveals that the child had primary amebic meningoencephalitis.This condition is usually acquired through:		
a	*	Freshwater swimming
b		Eating contaminated meat
c		Eating calves' brains
d		Anal intercourse
e		Animal bites
A 10-year-old girl is referred to a physician because of rapidly deteriorating school performance. Over the course of a few weeks, the child has lost interest in her schoolwork, appeared apathetic at home, and had frequent temper tantrums with little provocation. A psychiatric evaluation reveals that, in addition to emotional lability, the child has substantial intellectual deficits that appear to be new. Within 1 month of this evaluation, the child has a generalized tonic-clonic seizure. A neurologist examining the child discovers chorioretinitis, ataxia, hyperactive reflexes, and bilateral Babinski signs. Her EEG exhibits periodic bursts of high-voltage slow waves, followed by recurrent low-voltage stretches (burst suppression pattern). The CSF is remarkable for an increase in the gamma globulin fraction. The child becomes increasingly lethargic and obtunded over the ensuing 2 months. She remains in a coma for several months before dying. (select 1 condition):		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
b	*	Subacute sclerosing panencephalitis (SSPE)
c		Progressive multifocal leukoencephalopathy (PML)
d		Rabies encephalitis
e		Bartonella henselae encephalitis
A 37-year-old female Navy officer presents with 3 days of confusion and seizures. Her colleagues report that she has been acting strangely for 3 days. This is followed by generalized status epilepticus. The woman has previously been well. She has traveled to the Caribbean several times annually, and she has a new pet cat. General exam discloses epitrochlear lymphadenopathy. Neurologic exam shows the woman to be in status epilepticus. Cerebrospinal fluid is negative; MRI shows increased signal in the pulvinar bilaterally. (select 1 condition):		
a		Subacute HIV encephalomyelitis (AIDS encephalopathy)
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The early clinical effects of acute bacterial meningitis are:		
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Brudzinski sign is:		
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a		Senile plaques
b		Intraneuronal amyloid
c		Intranuclear inclusions
d		Intracytoplasmic inclusions
e	*	Microglial nodules
Somatoneurology can be sectioned into:		
a		Cardioneurology
b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Cardioneurology is sciense studying:		
a	*	Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
Stomatoneurology is sciense studying:		
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b	*	Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
b		Factors causing exacerbations
c		Symptoms that preceded the aggravation of the disease
d		Past illnesses, injuries and surgeries
e	*	All mentioned
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the heart:		
a	*	Region of Th3-Th4 on left
b		Region of Th6-Th7 on left
c		Region of Th2-Th3 on right
d		Region of Th3-Th4 on right
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the pylorus:		
a		Region of Th3
b		Region of Th4
c	*	Region of Th5
d		Region of Th6
e		Region of Th7
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of kidneys:		
a	*	Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6

d		Region of Th6-Th7
e		Region of Th6-Th7
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irregularly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapse
d		Arterial dissection
e		Meningovascular inflammation
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	HIV antibody testing
b		Cerebrospinal fluid (CSF) examination
c		Electroencephalography
d		Nerve conduction studies
e		Cardiac catheterization
Somatoneurology can be sectioned into:		
a		Cardioneurology
b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Somatoneuroorthopedics is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d	*	Diseases of bones & joints
e		All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs

d		Diseases of bones & joints
e		All mentioned
The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
b		Factors causing exacerbations
c		Symptoms that preceded the aggravation of the disease
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e	*	All mentioned
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the stomach:		
a		Region of Th3-Th4 on left
b	*	Region of Th4-Th7
c		Region of Th2-Th3 on right
d		Region of Th3-Th4
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the fundus of ovaries:		
a		Region of Th10
b		Region of Th4
c		Region of L2
d		Region of Th6
e	*	Region of L3
61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a	*	Basilar artery tip aneurysm
b		Right lateral medullary infarction
c		Left lateral medullary infarction
d		Left medial medullary infarction
e		Right medial medullary infarction
The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitaries
b		Nucleus and descending tract of CN V5
c	*	Nucleus ambiguous
d		Lateral spinothalamic tract
e		Inferior cerebellar peduncle
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in		

the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
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Somatoneurology can be sectioned into:		
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b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
Stomatoneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b	*	Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
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The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
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It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the stomach:		
a		Region of Th3-Th4 on left
b	*	Region of Th4-Th7
c		Region of Th2-Th3 on right
d		Region of Th3-Th4
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the fundus of uterus:		
a		Region of Th10
b	*	Region of L4
c		Region of L2
d		Region of Th6

e		Region of Th6
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail:		
a		Broca's aphasia
b		Wernicke's aphasia
c	*	Global aphasia
d		Conduction aphasia
e		Mixed transcortical aphasia
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	HIV antibody testing
b		Cerebrospinal fluid (CSF) examination
c		Electroencephalography
d		Nerve conduction studies
e		Cardiac catheterization
Somatoneurology can be sectioned into:		
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b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
Cardioneurology is sciense studying:		
a	*	Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
b		Factors causing exacerbations

c		Symptoms that preceded the aggravation of the disease
d		Past illnesses, injuries and surgeries
e	*	All mentioned
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the heart:		
a	*	Region of Th3-Th4 on left
b		Region of Th6-Th7 on left
c		Region of Th2-Th3 on right
d		Region of Th3-Th4 on right
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
Localization of viscera-cutaneous projections of the smaller curvature of the pylorus:		
a		Region of Th3
b		Region of Th4
c	*	Region of Th5
d		Region of Th6
e		Region of Th7
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
A 45-year-old woman with chronic atrial fibrillation discontinues warfarin treatment and abruptly develops problems with language comprehension.She is able to produce some intelligible phrases and produces sound quite fluently; however, she is unable to follow simple instructions or to repeat simple phrases. On attempting to write, she becomes very frustrated and agitated. What is the reason of his condition?		
a	*	Ischemic stroke
b		Hemorragic stroke
c		Transcortical motor aphasia
d		Anomic aphasia
e		Transient ischemic attack
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	HIV antibody testing
b		Cerebrospinal fluid (CSF) examination
c		Electroencephalography
d		Nerve conduction studies
e		Cardiac catheterization
Somatoneurology can be sectioned into:		

a		Cardioneurology
b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Somatoneuroorthopedics is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d	*	Diseases of bones & joints
e		All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
b		Factors causing exacerbations
c		Symptoms that preceded the aggravation of the disease
d		Past illnesses, injuries and surgeries
e	*	All mentioned
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the stomach:		
a		Region of Th3-Th4 on left
b	*	Region of Th4-Th7
c		Region of Th4-Th7
d		Region of Th3-Th4
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d	*	Region of Th4-Th7
e		Region of Th8-Th9 or L2 on right
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
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A 62-year-old man with a history of myocardial infarction awakens with a right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail. What is the reason of his condition?		

a	*	Ischemic stroke
b		Hemorragic stroke
c		Epylepsy
d		Repeated myocardial infarction
e		Transient ischemic attack
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal.The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b		Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d	*	Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
A 24-year-old woman abruptly loses all speech during the third trimester of an otherwise uncomplicated pregnancy. She has a history of severe migraines during which she occasionally develops a transient right hemiplegia. Her comprehension is good, and she is frustrated by her inability to speak or write. She is unable to repeat simple phrases, but she does begin to produce simple words within 5 days of the acute disturbance of language. What is the reason of her symptoms?		
a		Gliomatosis cerebri
b	*	Ischemic stroke
c		Mycotic aneurysm
d		Amyloid angiopathy
e		Undiagnosed hypertension
Somatoneurology can be sectioned into:		
a		Cardioneurology
b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Cardioneurology is sciense studying:		
a	*	Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
Stomatoneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b	*	Comorbid changes in the nervous system due to the maxillofacial diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
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The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
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It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the heart:		
a	*	Region of Th3-Th4 on left

b		Region of Th6-Th7 on left
c		Region of Th2-Th3 on right
d		Region of Th3-Th4 on right
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the pylorus:		
a		Region of Th3
b		Region of Th4
c	*	Region of Th5
d		Region of Th6
e		Region of Th7
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of kidneys:		
a	*	Region of Th10-Th12
b		Region of Th8-Th9
c		Region of Th5-Th6
d		Region of Th6-Th7
e		Region of Th7-Th8
A 67-year-old woman with a history of type II diabetes mellitus and atrial fibrillation presents to the emergency room with right body weakness and slurred speech. The onset was sudden while she was brushing her teeth 1 h ago, and she was brought immediately to the emergency room. She has no complaints of word-finding difficulties, no dysesthesia, and no headache. She is taking warfarin. Physical exam findings include blood pressure of 205/90 and irregularly irregular heart beat. There is left side neglect with slurred speech. There is a corticospinal pattern of weakness of the right body, with the face and upper extremity worse than the lower extremity. Routine chemistries and cell counts are normal. Her INR is The patient has an MRI that is consistent with an acute stroke. The most common cause of stroke is:		
a	*	Atherosclerosis
b		Fibromuscular dysplasia
c		Mitral valve prolapsed
d		Arterial dissection
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A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
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Somatoneurology can be sectioned into:		
a		Cardioneurology

b		Stomatoneurology
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Somatoneuroorthopedics is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Changes in the nervous system due to cardiovascular diseases
c		Comorbid changes in the nervous system due to the dysfunction of visceral organs
d	*	Diseases of bones & joints
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Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
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The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
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It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the stomach:		
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c		Region of Th2-Th3 on right
d		Region of Th3-Th4
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the fundus of ovaries:		
a		Region of Th10
b		Region of Th4
c		Region of L2
d		Region of Th6
e	*	Region of L3
61-year-old man with a history of hypertension has been in excellent health until he presents with vertigo and unsteadiness lasting for 2 days. He then develops nausea, vomiting, dysphagia, hoarseness, ataxia, left facial pain, and right-sided sensory loss. There is no weakness. On examination, he is alert, with a normal mental status. He vomits with head movement. There is skew deviation of the eyes, left ptosis, clumsiness of the left arm, and titubation. He has loss of pin and temperature sensation on the right arm and leg and decreased joint position sensation in the left foot. He is unable to walk. Magnetic resonance imaging (MRI) in this patient might be expected to show which of the following?		
a		Basilar artery tip aneurysm

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See question The dysphagia in this case is secondary to involvement of which of the following structures?		
a		Nucleus solitaries
b		Nucleus and descending tract of CN V5
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d		Lateral spinothalamic tract
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Somatoneurology can be sectioned into:		
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d		Vertebroneurology
e	*	All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
e		All mentioned
Stomatoneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases
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The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
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It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the stomach:		
a		Region of Th3-Th4 on left
b	*	Region of Th4-Th7
c		Region of Th5-Th8
d		Region of Th3-Th4

e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the smaller curvature of the fundus of uterus:		
a		Region of Th10
b	*	Region of L4
c		Region of L2
d		Region of Th6
e		Region of L3
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
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c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
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A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail:		
a		Broca's aphasia
b		Wernicke's aphasia
c	*	Global aphasia
d		Conduction aphasia
e		Mixed transcortical aphasia
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
a	*	HIV antibody testing
b		Cerebrospinal fluid (CSF) examination
c		Electroencephalography
d		Nerve conduction studies
e		Cardiac catheterization
Somatoneurology can be sectioned into:		
a		Cardioneurology
b		Stomatoneurology
c		Visceroneurology
d		Vertebroneurology
e	*	All mentioned
Visceroneurology is sciense studying:		
a		Changes in the nervous system due to cardiovascular diseases

b		Comorbid changes in the nervous system due to the maxillofacial diseases
c	*	Comorbid changes in the nervous system due to the dysfunction of visceral organs
d		Diseases of bones & joints
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The somatoneuroortopedic syndromes include - viscero-vertebral and/or vertebro-visceral symptoms. When collecting patients anamnesis special attention should be paid to:		
a		The presence of factors contributing in the development of the disease
b		Factors causing exacerbations
c		Symptoms that preceded the aggravation of the disease
d		Past illnesses, injuries and surgeries
e	*	All mentioned
It is believed that changes in the sensitivity of skin zones depend on the severity of somatic organ impulses and the severity of vertebral lesion. Localization of viscera-cutaneous projections of the heart :		
a	*	Region of Th3-Th4 on left
b		Region of Th6-Th7 on left
c		Region of Th2-Th3 on right
d		Region of Th3-Th4 on right
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th5-Th6
d		Region of Th6-Th7
e	*	Region of Th8-Th9 or L2 on right
Localization of viscera-cutaneous projections of the smaller curvature of the pylorus:		
a		Region of Th3
b		Region of Th4
c	*	Region of Th5
d		Region of Th6
e		Region of Th7
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal. Which of the following would be the most appropriate next diagnostic test?		
a		Creatine phosphokinase (CPK)
b		Holter monitor
c		Visual evoked responses
d	*	Carotid artery Doppler ultrasound
e		Conventional cerebral angiography
A 45-year-old woman with chronic atrial fibrillation discontinues warfarintreatment and abruptly develops problems with language comprehension.She is able to produce some intelligible phrases and produces sound quite fluently; however, she is unable to follow simple instructions or to repeat simple phrases. On attempting to write, she becomes very frustrated and agitated. What is the reason of his condition?		
a	*	Ischemic stroke
b		Hemorragic stroke
c		Transcortical motor aphasia

d		Anomic aphasia
e		Transient ischemic attack
A 22-year-old male abuser of intravenous heroin complains of severe headache while having sexual intercourse. Within a few minutes of that complaint, he develops right-sided weakness and becomes stuporous. His neurologic examination reveals neck stiffness as well as right arm and face weakness. An unenhanced emergency CT scan reveals a lesion of 3 to 4 cm in the cortex of the left parietal lobe. The addition of contrast enhancement reveals two other smaller lesions in the right frontal lobe but does not alter the appearance of the lesion in the left parietal lobe. The diagnostic study most likely to establish the basis for this patient's neurologic deficits is:		
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a		Region of Th3-Th4 on left
b	*	Region of Th4-Th7
c		Region of Th2-Th3 on right
d		Region of Th3-Th4
e		Region of Th1-Th2 on left
Localization of viscera-cutaneous projections of the smaller curvature of the fundus of appendix:		
a		Region of Th10-Th12
b		Region of Th4-Th5
c		Region of Th4-Th5
d		Region of Th6-Th7

e	*	Region of Th8-Th9 or L2 on right
A 75-year-old man with a history of recent memory impairment is admitted with headache, confusion, and a left homonymous hemianopsia. He has recently had two episodes of brief unresponsiveness. There is no history of hypertension. Computed tomography (CT) scan shows a right occipital lobe hemorrhage with some subarachnoid extension of the blood. An MRI scan with gradient echo sequences reveals foci of hemosiderin in the right temporal and left frontal cortex. The likely cause of this patient's symptoms and signs is:		
a		Gliomatosis cerebri
b		Multi-infarct dementia
c		Mycotic aneurysm
d	*	Amyloid angiopathy
e		Undiagnosed hypertension
A 62-year-old man with a history of myocardial infarction awakens with a dense right-sided hemiplegia. His eyes are tonically deviated to the left, and he does not respond to threat on the right side of his visual field. He appears to be alert and responds to pain on the left side of his body. His speech is unintelligible and nonfluent, and he follows no instructions. Efforts to get him to repeat simple phrases consistently fail. What is the reason of his condition?		
a	*	Ischemic stroke
b		Hemorragic stroke
c		Epylepsy
d		Repeated myocardial infarction
e		Transient ischemic attack
A 73-year-old man with a history of hypertension complains of a 10-min episode of left-sided weakness and slurred speech. On further questioning, he relates three brief episodes in the last month of sudden impairment of vision affecting the right eye. His examination now is normal.The episodes of visual loss are most likely related to:		
a		Retinal vein thrombosis
b	*	Central retinal artery ischemia
c		Posterior cerebral artery ischemia
d		Middle cerebral artery ischemia
e		Posterior ciliary artery ischemia
A 24-year-old woman abruptly loses all speech during the third trimester of an otherwise uncomplicated pregnancy. She has a history of severe migraines during which she occasionally develops a transient right hemiplegia. Her comprehension is good, and she is frustrated by her inability to speak or write. She is unable to repeat simple phrases, but she does begin to produce simple words within 5 days of the acute disturbance of language. What is the reason of her symptoms?		
a		Gliomatosis cerebri
b	*	Ischemic stroke
c		Mycotic aneurysm
d		Amyloid angiopathy
e		Undiagnosed hypertension
In Hirschsprung's disease, neural crest cells fail to migrate normally early in fetal development and produce potentially fatal complications within months of birth because of disturbed:		
a	*	Intestinal motility
b		Bladder control
c		Swallowing
d		Bile secretion
e		Cardiac rhythms
A newborn infant has a cystic swelling at the base of the spine that is covered with hyperpigmented skin and some coarse hair. Which of the following is the most likely explanation?		
a		Mongolian spot
b		Spina bifida occulta
c		Nevus flammeus
d	*	Meningocele

e		Encephalocele
At age 5, a child is noted to have the loss of ankle jerks. At age 10, limb ataxia develops, followed by a peripheral neuropathy. During adolescence, retinitis pigmentosa develops. Acanthocytosis is present.These are all characteristic of which of the following?		
a		Multiple sclerosis (MS)
b		Sickle cell disease
c	*	Abetalipoproteinemia
d		Progressive multifocal leukoencephalopathy (PML)
e		HIV subacute encephalomyelitis
The second cervical vertebra extends above the level of the foramen magnum and places the patient at high risk of having:		
a		A meningoencephalocele
b		A myelomeningocele
c		Syringobulbia
d	*	Syringomyelia
e		Brainstem compression
In view of the unusually wide separation (double-barbed arrow) of caudal elements of the atlas from the odontoid process, one should suspect:		
a	*	Instability of the atlantoaxial joint
b		Hemorrhage into the atlantoaxial joint
c		Fusion of C2 to C3
d		Fracture of the odontoid process
e		Fracture of the C2 spinous process
A 5-year-old boy has mental retardation, homonymous hemianopsia, and hemiparesis. He had infantile spasm and still has epilepsy. Head CT reveals calcifications in the cerebral cortex in a railroad track pattern. Which of the following does this child most likely have?		
a		Glioblastoma multiforme
b		Oligodendroglioma
c		Acoustic schwannoma
d		Craniopharyngioma
e	*	Sturge-Weber syndrome
A 35-year-old woman has prenatal testing done. The testing reveals that her child will have phenylketonuria (PKU). With PKU, serum may exhibit dangerously high levels of:		
a		Creatine phosphokinase (CPK)
b		Nicotinamide
c	*	Phenylketone
d		Lactate dehydrogenase
e		Phenylalanine
A 4-year-old previously healthy girl develops an intermittent red, scaly rash over her face, neck, hands, and legs. This is followed by developmental delay, emotional lability, and episodic cerebellar ataxia. She is diagnosed with Hartnup's disease. Her condition may respond to large supplementary doses of:		
a		Vitamin C
b	*	Nicotinamide
c		Thiamine
d		Pyridoxine
e		α tocopherol
Hepatosplenomegaly is most likely with:		
a		Tay-Sachs disease
b	*	Niemann-Pick disease
c		Alpers' disease
d		Subacute necrotizing encephalopathy
e		Wilson's disease (hepatolenticular degeneration)

A 25-year-old woman with epilepsy is taking divalproex sodium during the first trimester of pregnancy. She is at slightly increased risk of having children with which of the following?		
a		Holoprosencephaly
b	*	Defects of neural tube closure
c		Medulloblastoma
d		Agenesis of the corpus callosum
e		Kallmann syndrome
With agenesis of the corpus callosum, magnetic resonance imaging (MRI) will reveal:		
a		Atrophy of the frontal lobes
b	*	Abnormally shaped lateral and third ventricles
c		Cerebellar aplasia
d		Schizencephaly
e		Encephaloclastic porencephaly
A boy has the onset of difficulty walking at 16 months. Reflexes are decreased. Over the course of sever With agenesis of the corpus callosum, magnetic resonance imaging (MRI) will reveal:al months, the patient becomes dysarthric and mental functioning decreases. Testing reveals that the patient has a deficiency of arylsulfatase A. Which of the following does this patient most likely have?		
a		Sandhoff's disease
b		Tay-Sachs disease
c		Gaucher's disease
d	*	Metachromatic leukodystrophy
e		McArdle's disease
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. The most likely cause for this patient's low intelligence is which of the following?		
a		Turner syndrome
b	*	Klinefelter syndrome
c		Fragile X syndrome
d		Reye syndrome
e		Tuberous sclerosis
A 35-year-old man complains of stumbling and slurred speech. His problem started several months ago and has progressed slowly but consistently. On neurologic examination, he is found to have scanning speech, nystagmus, limb dysmetria, and kinetic tremor. His intellectual function is normal.The most appropriate initial investigation is:		
a		Lumbar puncture
b		Serum drug screen
c		Routine urinalysis
d		Posterior fossa myelogram
e	*	Precontrast CT scan
An infant has a head CT performed because of a large head and failure to thrive. The diagnosis of hydrocephalus is made. Congenital hydrocephalus may develop as a consequence of which first-trimester maternal disorder?		
a		Complicated migraine
b	*	Viral infection
c		Pseudotumor cerebri
d		Chorea gravidarum
e		Intervertebral disk herniation
See question Uncorrected congenital hydrocephalus will usually produce which of the following?		
a		Dolichocephaly
b		Brachycephaly
c		Holoprosencephaly
d	*	Macrocephaly
e		Microcephaly

A 6-month-old child is noted to have head lag, tongue fasciculations, and bilateral abducens palsies. MRI scan reveals a type 2 Chiari malformation. Which of the following defects would this child be likely to have?		
a		A renal cyst
b		Pulmonary atelectasis
c	*	Spina bifida
d		Holoprosencephaly
e		A hepatic cyst
A 7-year-old boy is taken by his parents to see a dermatologist. They have noticed nodules on his face and are concerned. The dermatologist tells them that their child has adenoma sebaceum. Adenoma sebaceum of the face is especially common with which of the following diseases?		
a		Neurofibromatosis
b		Sturge-Weber syndrome
c	*	Tuberous sclerosis
d		Ataxia telangiectasia
e		Fragile X syndrome
A 50-year-old man complaining of dizziness is found to have a cyst occupying 50% of his posterior fossa and incomplete fusion of the cerebellar elements inferiorly. There is no evidence of an obstructive hydrocephalus. His longevity can be estimated to be:		
a		Less than 3 months
b		Less than 1 year
c		Less than 5 years
d		Less than 10 years
e	*	Unaffected by this finding
See question The treatment of choice for children with infantile spasms is:		
a		Carbamazepine (Tegretol)
b		Phenobarbital
c		Phenytoin (Dilantin)
d		Divalproex sodium (Depakote)
e	*	Adrenocorticotropic hormone (ACTH)
The newborn infant with motor neuron disease is likely to exhibit:		
a		Seizures
b	*	Hypotonia
c		Hypsarrhythmia
d		Moro reflexes
e		Spina bifida
Many children with Tay-Sachs disease develop blindness before they die, with retinal accumulation of gangliosides that produces:		
a	*	Cherry red spots
b		Chorioretinitis
c		Retinal detachments
d		Waxy exudates
e		Optic neuritis
The parents of a 10-year-old boy bring their child in to see you. The child has been diagnosed with cerebral palsy, and the parents do not really understand what this means. As part of your explanation, you tell them that cerebral palsy is a static encephalopathy because:		
a		Deficits do not appear after birth
b	*	The injury to the brain does not progress
c		Affected persons fail to reach any developmental milestones on time:
d		Affected persons have resting tremors
e		The EEG exhibits a disorganized background rhythm
A 6-year-old child is brought to the neurologist because of developmental delay. Her morphological features are typical and chromosome analysis confirms a diagnosis of Down syndrome (trisomy 21). The brain of this		

patient is expected to be:		
a	*	Smaller than normal for age and body size
b		Larger than normal for age and body size
c		Abnormally long in anteroposterior measurements
d		Excessively convoluted
e		None of the above
Porencephaly usually develops as a consequence of:		
a		Fetal alcohol syndrome
b	*	Vascular or other destructive injuries to the fetal brain
c		Trisomy 13
d		Trisomy 21
e		Dandy-Walker syndrome
What percentage of patients with tuberous sclerosis have mental retardation?		
a		1
b		10
c		25
d	*	65
e		99
A child is born to a 19-year-old woman who has had two to eight drinks per day throughout her pregnancy. What is the major pathologic effect of alcohol on the central nervous system of the developing fetus?		
a		Cerebral ischemia
b		Periventricular hemorrhage
c		Macrocephaly
d	*	Impaired neuronal migration
e		Holoprosencephaly
A 37-year-old man has an MRI performed by his primary care doctor because of a long history of headaches. It is notable only for the finding of a type 1 Chiari malformation. He is sent to a neurologist for further evaluation. A type 1 Chiari malformation usually becomes symptomatic as which of the following in adults?		
a		Epilepsy
b		Hydrocephalus
c	*	Ataxia
d		Dementia
e		Psychosis
A 25-year-old mother develops an illness during pregnancy. A diagnosis of cytomegalovirus (CMV) infection is made by serology. Prenatal CMV infections may produce which retinal disturbance?		
a	*	Chorioretinitis
b		Cherry red spot
c		Microaneurysms
d		Hypervascularity
e		Hemorrhage
In Hirschsprung's disease, neural crest cells fail to migrate normally early in fetal development and produce potentially fatal complications within months of birth because of disturbed:		
a	*	Intestinal motility
b		Bladder control
c		Swallowing
d		Bile secretion
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A newborn infant has a cystic swelling at the base of the spine that is covered with hyperpigmented skin and some coarse hair. Which of the following is the most likely explanation?		
a		Mongolian spot
b		Spina bifida occulta
c		Nevus flammeus
d	*	Meningocele
e		Encephalocele
At age 5, a child is noted to have the loss of ankle jerks. At age 10, limb ataxia develops, followed by a peripheral neuropathy. During adolescence, retinitis pigmentosa develops. Acanthocytosis is present. In this disorder, chylomicrons, very-low-density lipoprotein (VLDL), and low-density lipoprotein (LDL) are largely absent in the serum as a consequence of a mutation in which gene?		
a	*	Microsomal triglyceride transfer protein (MTP)
b		Huntingtin
c		Amyloid precursor protein
d		Dystrophin
e		Transfer RNA (tRNA)
The second cervical vertebra extends above the level of the foramen magnum and places the patient at high risk of having:		
a		A meningoencephalocele
b		A myelomeningocele
c		Syringobulbia
d	*	Syringomyelia
e		Brainstem compression
A 4-year-old previously healthy girl develops an intermittent red, scaly rash over her face, neck, hands, and legs. This is followed by developmental delay, emotional lability, and episodic cerebellar ataxia. She is diagnosed with Hartnup's disease. Her condition may respond to large supplementary doses of:		
a		Vitamin C
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With agenesis of the corpus callosum, magnetic resonance imaging (MRI) will reveal:		
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e		Encephaloclastic porencephaly
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. Women carrying chromosomes for this disorder:		
a	*	Are invariably normal
b		Have mild retardation in about one-half of cases
c		Have high-arched palates and hypotelorism
d		Have hyperextensible joints
e		Have prominent thumbs
A 35-year-old man complains of stumbling and slurred speech. His problem started several months ago and has progressed slowly but consistently. On neurologic examination, he is found to have scanning speech, nystagmus, limb dysmetria, and kinetic tremor. His intellectual function is normal. Admission studies include a hematocrit of 55% and a routine urinalysis, which reveals excess protein and some RBCs in the urine. Urine culture is negative. The initial physical examination reveals an enlarged liver and spleen. Additional physical findings will most likely include:		

a	*	A Kayser-Fleischer ring around the cornea
b		Hypopigmented (ash leaf) spots on the trunk
c		Telangiectasias in the fundi on retinal examination
d		Bilateral hearing loss
e		Generalized hyporeflexia
See question Within 6 years of his initial visit, the patient returns with a pathologic fracture of his spine. Biopsy reveals metastatic cancer. The source of the tumor is most likely the:		
a		Cerebral hemisphere
b		Cerebellar hemisphere
c		Liver
d	*	Kidney
e		Spleen
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a		A sex-linked recessive pattern
b	*	An autosomal dominant pattern
c		An autosomal recessive pattern
d		A pattern most consistent with newly arising mutations
e		A pattern suggesting a mitochondrial gene defect
See question Calcifications evident on the skull x-ray or CT scan of a patient with this disease usually represent:		
a		Calcified subependymal glial nodules
b		Calcified meningeal adhesions
c		Meningeal psammoma bodies
d		Calcified astrocytomas
e	*	Calcified granulomas
A 50-year-old man complaining of dizziness is found to have a cyst occupying 50% of his posterior fossa and incomplete fusion of the cerebellar elements inferiorly. There is no evidence of an obstructive hydrocephalus. His longevity can be estimated to be:		
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Hepatosplenomegaly is most likely with:		
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In view of the unusually wide separation (double-barbed arrow) of caudal elements of the atlas from the odontoid process, one should suspect:		
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b	*	Defects of neural tube closure
c		Medulloblastoma
d		Agenesis of the corpus callosum
e		Kallmann syndrome
With agenesis of the corpus callosum, magnetic resonance imaging (MRI) will reveal:		
a		Atrophy of the frontal lobes
b	*	Abnormally shaped lateral and third ventricles
c		Cerebellar aplasia
d		Schizencephaly
e		Encephaloclastic porencephaly
A boy has the onset of difficulty walking at 16 months. Reflexes are decreased. Over the course of several months, the patient becomes dysarthric and mental functioning decreases. Testing reveals that the patient has a deficiency of arylsulfatase A. Which of the following does this patient most likely have?		
a		Sandhoff's disease
b		Tay-Sachs disease
c		Gaucher's disease
d	*	Metachromatic leukodystrophy
e		McArdle's disease
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. The most likely cause for this patient's low intelligence is which of the following?		
a		Turner syndrome
b	*	Klinefelter syndrome
c		Fragile X syndrome
d		Reye syndrome
e		Tuberous sclerosis
A 35-year-old man complains of stumbling and slurred speech. His problem started several months ago and has progressed slowly but consistently. On neurologic examination, he is found to have scanning speech, nystagmus, limb dysmetria, and kinetic tremor. His intellectual function is normal.The most appropriate initial investigation is:		
a		Lumbar puncture
b		Serum drug screen
c		Routine urinalysis
d		Posterior fossa myelogram
e	*	Precontrast CT scan
An infant has a head CT performed because of a large head and failure to thrive. The diagnosis of hydrocephalus is made. Congenital hydrocephalus may develop as a consequence of which first-trimester maternal disorder?		
a		Complicated migraine
b	*	Viral infection
c		Pseudotumor cerebri
d		Chorea gravidarum
e		Intervertebral disk herniation
See question Uncorrected congenital hydrocephalus will usually produce which of the following?		
a		Dolichocephaly
b		Brachycephaly
c		Holoprosencephaly
d	*	Macrocephaly
e		Microcephaly
A 6-month-old child is noted to have head lag, tongue fasciculations, and bilateral abducens palsies. MRI scan reveals a type 2 Chiari malformation. Which of the following defects would this child be likely to have?		
a		A renal cyst

b		Pulmonary atelectasis
c	*	Spina bifida
d		Holoprosencephaly
e		A hepatic cyst
A 7-year-old boy is taken by his parents to see a dermatologist. They have noticed nodules on his face and are concerned. The dermatologist tells them that their child has adenoma sebaceum. Adenoma sebaceum of the face is especially common with which ofthe following diseases?		
a		Neurofibromatosis
b		Sturge-Weber syndrome
c	*	Tuberous sclerosis
d		Ataxia telangiectasia
e		Fragile X syndrome
A 50-year-old man complaining of dizziness is found to have a cyst occupying 50% of his posterior fossa and incomplete fusion of the cerebellar elements inferiorly. There is no evidence of an obstructive hydrocephalus. His longevity can be estimated to be:		
a		Less than 3 months
b		Less than 1 year
c		Less than 5 years
d		Less than 10 years
e	*	Unaffected by this finding
See question The treatment of choice for children with infantile spasms is:		
a		Carbamazepine (Tegretol)
b		Phenobarbital
c		Phenytoin (Dilantin)
d		Divalproex sodium (Depakote)
e	*	Adrenocorticotropic hormone (ACTH)
The newborn infant with motor neuron disease is likely to exhibit:		
a		Seizures
b	*	Hypotonia
c		Hypsarrhythmia
d		Moro reflexes
e		Spina bifida
Many children with Tay-Sachs disease develop blindness before they die, with retinal accumulation of gangliosides that produces:		
a	*	Cherry red spots
b		Chorioretinitis
c		Retinal detachments
d		Waxy exudates
e		Optic neuritis
The parents of a 10-year-old boy bring their child in to see you. The child has been diagnosed with cerebral palsy, and the parents do not really understand what this means. As part of your explanation, you tell them that cerebral palsy is a static encephalopathy because:		
a		Deficits do not appear after birth
b	*	The injury to the brain does not progress
c		Affected persons fail to reach any developmental milestones on time
d		Affected persons have resting tremors
e		The EEG exhibits a disorganized background rhythm
A 6-year-old child is brought to the neurologist because of developmental delay. Her morphological features are typical and chromosome analysis confirms a diagnosis of Down syndrome (trisomy 21). The brain of this patient is expected to be:		
a	*	Smaller than normal for age and body size
b		Larger than normal for age and body size

c		Abnormally long in anteroposterior measurements
d		Hydrocephalic
e		Excessively convoluted
Porencephaly usually develops as a consequence of:		
a		Fetal alcohol syndrome
b	*	Vascular or other destructive injuries to the fetal brain
c		Trisomy 13
d		Trisomy 21
e		Dandy-Walker syndrome
What percentage of patients with tuberous sclerosis have mental retardation?		
a		1
b		10
c		25
d	*	65
e		99
A child is born to a 19-year-old woman who has had two to eight drinks per day throughout her pregnancy. What is the major pathologic effect of alcohol on the central nervous system of the developing fetus?		
a		Cerebral ischemia
b		Periventricular hemorrhage
c		Macrocephaly
d	*	Impaired neuronal migration
e		Holoprosencephaly
A 37-year-old man has an MRI performed by his primary care doctor because of a long history of headaches. It is notable only for the finding of a type 1 Chiari malformation. He is sent to a neurologist for further evaluation. A type 1 Chiari malformation usually becomes symptomatic as which of the following in adults?		
a		Epilepsy
b		Hydrocephalus
c	*	Ataxia
d		Dementia
e		Psychosis
A 25-year-old mother develops an illness during pregnancy. A diagnosis of cytomegalovirus (CMV) infection is made by serology. Prenatal CMV infections may produce which retinal disturbance?		
a	*	Chorioretinitis
b		Cherry red spot
c		Microaneurysms
d		Hypervascularity
e		Hemorrhage
In Hirschsprung's disease, neural crest cells fail to migrate normally early in fetal development and produce potentially fatal complications within months of birth because of disturbed:		
a	*	Intestinal motility
b		Bladder control
c		Swallowing
d		Bile secretion
e		Cardiac rhythms
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a	*	Intestinal motility
b		Bladder control
c		Swallowing
d		Bile secretion
e		Cardiac rhythms
A newborn infant has a cystic swelling at the base of the spine that is covered with hyperpigmented skin and		

some coarse hair. Which of the following is the most likely explanation?		
a		Mongolian spot
b		Spina bifida occulta
c		Nevus flammeus
d	*	Meningocele
e		Encephalocele
At age 5, a child is noted to have the loss of ankle jerks. At age 10, limb ataxia develops, followed by a peripheral neuropathy. During adolescence, retinitis pigmentosa develops. Acanthocytosis is present. In this disorder, chylomicrons, very-low-density lipoprotein (VLDL), and low-density lipoprotein (LDL) are largely absent in the serum as a consequence of a mutation in which gene?		
a	*	Microsomal triglyceride transfer protein (MTP)
b		Huntingtin
c		Amyloid precursor protein
d		Dystrophin
e		Transfer RNA (tRNA)
The second cervical vertebra extends above the level of the foramen magnum and places the patient at high risk of having:		
a		A meningoencephalocele
b		A myelomeningocele
c		Syringobulbia
d	*	Syringomyelia
e		Brainstem compression
A 4-year-old previously healthy girl develops an intermittent red, scaly rash over her face, neck, hands, and legs. This is followed by developmental delay, emotional lability, and episodic cerebellar ataxia. She is diagnosed with Hartnup's disease. Her condition may respond to large supplementary doses of:		
a		Vitamin C
b	*	Nicotinamide
c		Thiamine
d		Pyridoxine
e		α tocopherol
With agenesis of the corpus callosum, magnetic resonance imaging (MRI) will reveal:		
a		Atrophy of the frontal lobes
b	*	Abnormally shaped lateral and third ventricles
c		Cerebellar aplasia
d		Schizencephaly
e		Encephaloclastic porencephaly
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. Women carrying chromosomes for this disorder:		
a	*	Are invariably normal
b		Have mild retardation in about one-half of cases
c		Have high-arched palates and hypotelorism
d		Have hyperextensible joints
e		Have prominent thumbs
A 35-year-old man complains of stumbling and slurred speech. His problem started several months ago and has progressed slowly but consistently. On neurologic examination, he is found to have scanning speech, nystagmus, limb dysmetria, and kinetic tremor. His intellectual function is normal. Admission studies include a hematocrit of 55% and a routine urinalysis, which reveals excess protein and some RBCs in the urine. Urine culture is negative. The initial physical examination reveals an enlarged liver and spleen. Additional physical findings will most likely include:		
a	*	A Kayser-Fleischer ring around the cornea
b		Hypopigmented (ash leaf) spots on the trunk
c		Telangiectasias in the fundi on retinal examination

d		Bilateral hearing loss
e		Generalized hyporeflexia
See question Within 6 years of his initial visit, the patient returns with a pathologic fracture of his spine. Biopsy reveals metastatic cancer. The source of the tumor is most likely the:		
a		Cerebral hemisphere
b		Cerebellar hemisphere
c		Liver
d	*	Kidney
e		Spleen
A 6-month-old child is noted to have head lag, tongue fasciculations, and bilateral abducens palsies. MRI scan reveals a type 2 Chiari malformation. Which of the following defects would this child be likely to have?		
a		A renal cyst
b		Pulmonary atelectasis
c	*	Spina
d		Holoprosencephaly
e		A hepatic cyst
A 7-year-old boy is taken by his parents to see a dermatologist. They have noticed nodules on his face and are concerned. The dermatologist tells them that their child has adenoma sebaceum. This disease is inherited in:		
a		A sex-linked recessive pattern
b	*	An autosomal dominant pattern
c		An autosomal recessive pattern
d		A pattern most consistent with newly arising mutations
e		A pattern suggesting a mitochondrial gene defect
See question Calcifications evident on the skull x-ray or CT scan of a patient with this disease usually represent:		
a	*	Calcified subependymal glial nodules
b		Calcified meningeal adhesions
c		Meningeal psammoma bodies
d		Calcified astrocytomas
e		Calcified granulomas
A 50-year-old man complaining of dizziness is found to have a cyst occupying 50% of his posterior fossa and incomplete fusion of the cerebellar elements inferiorly. There is no evidence of an obstructive hydrocephalus. His longevity can be estimated to be:		
a		Less than 3 months
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A newborn infant has a cystic swelling at the base of the spine that is covered with hyperpigmented skin and some coarse hair. Which of the following is the most likely explanation?		
a		Mongolian spot
b		Spina bifida occulta
c		Nevus flammeus
d	*	Meningocele
e		Encephalocele
Hepatosplenomegaly is most likely with:		
a		Tay-Sachs disease
b	*	Niemann-Pick disease
c		Alpers' disease
d		Subacute necrotizing encephalopathy
e		Wilson's disease (hepatolenticular degeneration)
A 15-year-old boy has moderate mental retardation, attention deficit disorder, a long face, enlarged ears, and macroorchidism. Development has been steady but always at a delayed pace. The most likely cause for this patient's low intelligence is which of the following?		
a		Turner syndrome
b	*	Klinefelter syndrome
c		Fragile X syndrome
d		Reye syndrome
e		Tuberous sclerosis
Women carrying chromosomes for this disorder:		
a	*	Are invariably normal
b		Have mild retardation in about one-half of cases
c		Have high-arched palates and hypotelorism
d		Have hyperextensible joints
e		Have prominent thumbs
The diencephalon consists of all of the following structures except:		
a		Thalamus
b		Subthalamus
c	*	Pons
d		Putamen
e		All of the above
Which subclavian artery would you inject with contrast to demonstrate both the carotid and vertebral circulation?		
a		Left subclavian
b	*	Right subclavian
c		Neither, you cannot see both the carotid and vertebral circulation
d		Either, you can see both the carotid and vertebral circulation with either subclavian artery
e		All of the above
An epidural hemorrhage results in a tear in what vessel?		
a		Bridging veins
b	*	Middle meningeal artery
c		Anterior choroidal artery
d		None of the above
e		All of the above

Occlusion of which area of the circle of Willis will result in total unilateral blindness?		
a	*	Ophthalmic artery
b		Anterior choroidal artery
c		Vertebral artery
d		Anterior spinal artery
e		All of the above
Hemisection of the spinal cord at the level of T1 actually produces contralateral loss of pain/temperature sensation at what level?		
a		T1
b		T2
c	*	T3
d		C7
e		All of the above
A 35-year-old male presents with bilateral paralysis, fasciculations, and muscle atrophy at and below T1 along with bilateral pain and temperature loss at the level of TWhat is the cause of his symptoms?		
a		Middle cerebral artery (MCA) stroke
b		Carbon monoxide poisoning
c	*	Syringomyelia
d		Amyotrophic lateral sclerosis (ALS)
e		None of the above
Common causes of carpal tunnel syndrome include all of the following except:		
a		Rheumatoid arthritis
b		Diabetes mellitus
c		Acromegaly
d		Pregnancy
e	*	All of the above are possible causes of carpal tunnel syndrome
Which one of the following carries the majority of the information from the outside into the cerebellum?		
a		Granule cells
b		Basket cells
c	*	Mossy fibers
d		Dentate nucleus
e		All of the above
Dejerine-Roussy syndrome can be associated with?		
a		Lesion in the oculomotor nerve
b		Lesion in the left occipital lobe
c	*	Lesion in the ventral posterior area of the thalamus
d		Lesion in the lateral geniculate nucleus
e		All of the above
Klüver-Bucy syndrome is associated with which disease?		
a	*	Pick’s disease
b		Guillain-Barré syndrome
c		Grave’s disease
d		Lambert-Eaton syndrome
e		None of the above
A 42-year-old male with a history of alcoholism presents to the hospital with confusion, diplopia (ophthalmoparesis), unsteady gait, and nystagmus. The most likely cause for these symptoms is thiamine deficiency.Where is the lesion?		
a		Edinger-Westphal nucleus
b	*	Mamillary bodies
c		Left parietal lobe
d		Nucleus solitarius
e		None of the above

Which of the following is true regarding a lesion of the right vestibular nuclei?		
a		The left paramedian pontine reticular formation (PPRF) is more active than the right PPRF
b		The fast phase of nystagmus is to the right
c		Stumbling to the left
d	*	The left lateral vestibulospinal tract is more active than the right
e		Slow phase of nystagmus to the left
Which of the following statements is not true?		
a		Weakness is the least common sign of a cerebellar lesion
b		Golgi cells in the cerebellum lie in the granule cell layer and are excitatory
c	*	Basket cells in the cerebellum excite Purkinje cell firing
d		Fastigial nucleus receives input from Purkinje cells in the cerebellum
e		All of the above
Which of the following statements is TRUE?		
a		Nerve root C3 exits above vertebra C3
b		A C6 radiculopathy results in pain from the dorsal aspect of the thumb and index finger
c		A C7 radiculopathy results in pain in the middle finger
d		Spinal nerve C7 exits below vertebra C6
e	*	All are true statements
A complete transection of the spinal cord at C2 results in a spastic bladder immediately after the injury (during spinal shock).		
a		True
b	*	False
Which of the following statement(s) is true?		
a		The supplementary motor area (SMA) and premotor cortex (PM) are both in Brodmann's area 6
b		The SMA and PM are both involved in premotor planning
c		Primary motor cortex is involved in the execution of a movement
d		Pyramidal tract neurons fire before the muscles contract in an intended movement
e	*	All of the above are true
Which of the following statements is false?		
a		The SMA becomes active when thinking of a complex motor task, even when the task is not actually performed
b		The neurons in the SMA and primary motor cortex fire prior to a given movement
c		Lesions in the SMA result in apraxias, whereas lesions in primary motor cortex result in contralateral paresis and upper motor neuron signs
d	*	Both the SMA and primary motor cortex code for the force of a movement
e		All of the above
A 60-year-old male presents with a stroke in the left occipital lobe, and a 72-year-old male presents with controlled glaucoma for 1 year. Which patient will have worse visual acuity?		
a		The stroke patient
b		The glaucoma patient
c	*	Neither
d		Both
e		All of the above
Which of the following structures is not paired correctly with all or part of its blood supply?		
a		Anterior limb of internal capsule—medial striates
b		Dorsal part of the posterior limb of internal capsule—middle cerebral
c		Visual cortex—posterior cerebral
d		Broca's motor speech area—middle cerebral
e	*	Hippocampus—anterior cerebral
A lesion in the frontal association cortex on the left would most likely result in:		
a		Ipsilateral homonymous hemianopsia
b		Resting tremor

c		Wernicke's aphasia
d	*	Broca's aphasia
e		Diplopia
A lesion of the ventromedial nucleus of the hypothalamus (which lies in the tuberal level) has been shown (in experimental animals) to produce:		
a		Diabetes insipidus
b	*	Increased appetite (hyperphagia) and rage
c		Loss of appetite
d		Memory loss and aphasia
e		Lack of prolactin production
Bilateral lesions of the ventral portion of the temporal lobes involving the hippocampal formation would most likely result in patients exhibiting which of the following signs and symptoms?		
a		Difficulty expressing their thoughts
b		Trouble understanding speech and also trouble with verbal expression
c		Loss of the sensation of pain, without loss of pain sensitivity or discrimination
d		Long-term memory loss
e	*	Short-term memory loss
The mammillary bodies:		
a		Are damaged in korsakoff's syndrome
b		Receive input from the fornix
c		Project to the medial dorsal nucleus of the thalamus
d		Are involved in temperature regulation
e	*	A and B
Which of the following statements is not true regarding the paraventricular nucleus of the hypothalamus?		
a	*	Cells are involved in regulating circadian rhythm
b		It is involved in the production of oxytocin
c		It is involved in regulating of water balance
d		Cells project to the posterior lobe of the pituitary gland
e		All of the above
Which of the following statements is correct?		
a		Patients with prosopagnosia do not recognize fingers
b		Reading disorders are called dysphagia
c	*	Broca's aphasia can be accompanied by hemiplegia
d		Anton's syndrome is a type of aphasia
e		All of the above
Which of the following statements is correct regarding apraxias?		
a		A lesion in ideomotor apraxia involves the temporal parietal junction
b		A patient with ideomotor apraxia will use the wrong object to perform the correct action
c		Apraxias are always associated with hemiparesis
d		A patient with an ideal apraxia is unable to use the correct motor sequence
e	*	A lesion in ideomotor apraxia involves the parietal lobe and SMA
Which of the following statements is TRUE regarding the mesocorticolimbic dopamine system?		
a		It comes from the ventral tegmental area and innervates the limbic structures and visual cortex
b	*	It is part of reinforcement and reward
c		It arises from the substantia nigra and innervates the limbic and prefrontal cortical region
d		It arises from the raphe nucleus and innervates the limbic cortical region
e		All of the above
The human circadian pacemaker is located in the:		
a		Reticular activating system
b		Thalamus
c	*	Suprachiasmatic nucleus
d		Pons

e		All of the above
Which of the following statements is not true regarding serotonin?		
a	*	Cell bodies lie in the substantia nigra and innervate the cortex and limbic system
b		It is increased by monoamine oxidase inhibitors and tricyclics
c		It is likely decreased in impulsive individuals
d		It is kept in synaptic cleft longer by fluoxetine
e		It is produced in raphe nuclei
The tuberomammillary nucleus is the only location in the brain that produces histamine		
a	*	True
b		False
The severe short-term (explicit) memory deficits characteristic of Alzheimer's disease would most likely be due to:		
a	*	Plaques and tangles in the hippocampal regions
b		Neurofilaments and tau protein in basal ganglia
c		Degeneration of the ventral tegmental area
d		Loss of norepinephrine in the amygdala
e		All of the above
A 65-year-old female presents with headache, fever, and occasional jaw claudication. What is the most likely cause?		
a		Left MCA stroke
b		Tension headache
c		Trigeminal neuralgia
d	*	Temporal arteritis
e		All of the above
Which cranial nerve is affected in the syndrome known as tic douloureux?		
a		CN II
b	*	CN V
c		CN VII
d		CN X
e		CN IV
Horner's syndrome is often associated with which one of the following?		
a	*	Cluster headache
b		Multiple sclerosis
c		Lyme disease
d		Anton's syndrome
e		All of the above
A 73-year-old female presents with symptoms consistent with amaurosis fugax. Which vessel is most likely involved?		
a		Vertebral artery
b		PCA
c	*	Ophthalmic artery
d		Central retinal vein
e		Lenticulostriate artery
A 93-year-old male presents with left leg weakness, irritability, and mood disturbance that occurred suddenly this morning. Which artery is most likely involved?		
a		Right anterior choroidal artery
b		Left anterior cerebral artery
c		Left middle cerebral artery (MCA)
d		Right posterior cerebral artery
e	*	None of the above
A 67-year-old right-handed male presents to the emergency department (ED) with decreased consciousness, ophthalmoplegia, pupillary constriction, and bilateral paralysis. Which artery or arteries would most likely be		

involved?		
a		Left posterior cerebral artery
b	*	Basilar artery
c		Bilateral anterior cerebral arteries
d		Bilateral external carotid arteries
e		All of the arteries above could cause these symptoms
A 36-year-old female with a congenital berry aneurysm of the circle of Willis may also have one of the following?		
a		Ulcerative colitis
b		Polycystic ovarian syndrome
c		Turner's syndrome
d	*	Polycystic kidney disease
e		Abdominal aortic aneurysm
A 54-year-old male with a history of hypertension presents with sudden onset of hemiballistic movements of his right upper extremity. If these symptoms were due to a stroke, the most likely location and artery involved would be?		
a		Thalamus; MCA
b	*	Subthalamic nucleus; posterior cerebral artery
c		Genu of the internal capsule; anterior choroidal artery
d		Caudate; MCA
e		None of the above
A 28-year-old right-handed male presents to the ED with confusion and headache. A computed tomography (CT) scan of the head is performed and reveals hydrocephalus. This condition may be associated with an overproduction of cerebrospinal fluid (CSF), which would be associated with which structure?		
a		Meninges
b	*	Choroid plexus
c		Foramen of Luschka
d		Foramen of Magendie
e		All of the above
A 35-year-old male presents to the ED after a motor vehicle accident with decreased consciousness. On CT scan of his head, an epidural hemorrhage is noted. What is the most likely vessel involved?		
a		External carotid artery
b	*	Middle meningeal artery
c		Anterior choroidal artery
d		Bridging vein
e		All of the above
An 84-year-old male with a history of a right MCA territory stroke about 6 months ago presents to your office. The hallmark features on his examination could include all of the following except?		
a		Spastic paralysis
b	*	Fasciculations
c		Hyperreflexia
d		No significant muscle atrophy
e		All of the above
A 78-year-old female presents with a history of polio and has residual lower extremity weakness, atrophy, fasciculations, and hyporeflexia.Where did the polio virus cause the damage?		
a		Dorsal root ganglion
b	*	Anterior horn cells
c		C2 spinal root
d		Lumbosacral plexus
e		None of the above
An 18-year-old male presented to the ED after a recent MVA and hemisection of his spinal cord at TAt what level would he have pain and temperature loss?		

a		T1
b		T2
c	*	T4
d		C7
e		None of the above; pain and temperature would be preserved
A 54-year-old male presented to the clinic with recent damage to his S2 and S3 nerve root. What is the most likely autonomic system that is involved?		
a		Sympathetic
b	*	Parasympathetic
c		Both are involved
d		Neither are involved
e		All of the above
Which pathway connects the hippocampus, hypothalamus, thalamus, and the cortex?		
a		Gatz pathway
b	*	Papez circuit
c		Mendel circuit
d		Klüver-Bucy pathway
e		All of the above
The parasympathetic system has what kind of effect on the adrenal medulla?		
a		It stimulates the secretion of adrenaline via cholinergic fibers
b		It stimulates the secretion of the rennin-angiotensin system
c	*	It has no significant effect
d		It increases aldosterone production
e		All of the above
The sympathetic system exerts its affects on the lungs by:		
a		Constricting the bronchial tubes
b		Stimulating bronchial gland secretion
c		Increasing carbon dioxide production
d	*	Dilating the bronchial tubes
e		All of the above
A 32-year-old female presents with episodes of high blood pressure, sudden fevers, and vomiting without an infectious etiology. She also states her eyes are dry, and she has decreased ability to form tears. She is very anxious and occasionally irritable. She states there may be someone in the family with similar complaints but is not sure. What is the most likely diagnosis?		
a		A variant of Guillain-Barré syndrome
b		Charcot-Marie-Tooth disease type Va
c	*	Riley-Day syndrome
d		Korsakoff's syndrome
e		None of the above
Congenital central hypoventilation syndrome (CCHS) is sometimes associated with what abnormality?		
a		Shoulder dystocia
b	*	Absence of parasympathetic ganglion cells in the colon
c		Diabetes insipidus
d		Horner's syndrome
e		All of the above
A 72-year-old male presents with weakness and decreased sensation in his left leg up to his hip as well as hyperreflexia. What is the most likely cause?		
a	*	Right anterior cerebral artery occlusion
b		Left MCA occlusion
c		Left posterior cerebral artery occlusion
d		Right superior cerebellar artery occlusion
e		None of the above

A 64-year-old female presents with bilateral upper and lower extremity muscle atrophy, fasciculations, and hyperreflexia. What is the most likely etiology?		
a		Guillain-Barré syndrome
b	*	ALS
c		Tertiary syphilis
d		Brown- Séquard syndrome
e		Syringomyelia
A 57-year-old male veteran presents with a history of severe pain in both lower extremities, decreased proprioception up to the hip, and a positive Romberg's sign. What is the most likely cause of his symptoms?		
a		Left thalamic infarct
b		Polio
c		Diabetic polyneuropathy
d	*	Tertiary syphilis
e		Cerebellar infarct
A 39-year-old female presents after an MVA with bilateral shoulder and arm numbness. She has decreased pain and temperature in the shoulder and arms, but light touch and proprioception is intact. What is likely the cause?		
a		Pernicious anemia
b		Copper metabolism defect
c		Cytomegalovirus (CMV) radiculitis
d	*	Syringomyelia
e		Brown-Séquard syndrome
A 23-year-old female presented with a rapid onset of weakness that started in her feet and moved up her body. She complained of having diarrhea about 2 weeks ago. Which one of the following is associated with this condition?		
a		Anti-GAD ab
b		Anti-Hu ab
c	*	Campylobacter jejuni
d		Anti-Ma ab
e		Clostridium difficile
A 72-year-old male presented with onset of pain, numbness, and tingling around both gluteal regions and atrophy. The patient also stated that he had become impotent. What is the likely location of his lesion?		
a		L1–L4
b	*	S2–S4
c		C3–C5
d		Lumbosacral plexus
e		None of the above
A 56-year-old female suddenly developed left severe neck pain, tongue deviation to the left, right-sided paralysis, loss of proprioception on the right side, and hyperreflexia. Pain and temperature were intact throughout. What is the likely location of the lesion?		
a		Left C5 nerve root
b	*	Left medulla
c		Right thalamus
d		Left globus pallidus
e		All of the above
A 45-year-old male with chronic alcohol use presented with a seizure. In the ED, he was given D5NaCl solution and lorazepam. A head CT scan was performed, which was negative for any acute pathology. The patient then progressed and started to have amnesia of his current visit but had retained all his previous memory. He also started making up answers to questions that were not true. What is the most likely location of his lesion and what is the cause?		
a		Occipital lobe; B12 deficiency
b		Left temporal lobe; lorazepam
c	*	Bilateral mamillary body; thiamine deficiency
d		Reticular activating system; niacin deficiency

e		None of the above
Which of the following groups is paired incorrectly?		
a		CN XII lesion; tongue deviates toward the side of the lesion
b	*	CN V motor lesion; the jaw deviates away from the side of the lesion
c		Cerebellar lesion; falls toward the side of the lesion
d		CN X lesion; uvula deviates away from the side of the lesion
e		CN XI lesion; head turns to the same side of the lesion
What path connects Wernicke's to Broca's area?		
a		Longitudinal fasciculus
b	*	Arcuate fasciculus
c		Cingulate gyrus
d		Brodmann's area 44
e		Splenium of the corpus callosum
A 63-year-old female presents to her ophthalmologist with complaints of being unable to see anything in her left upper quadrant. Where is the lesion located?		
a		Right optic tract
b		Left lateral geniculate body
c		Right calcarine fissure
d	*	Right Meyer's loop
e		Optic chiasm
Which artery occlusion would cause the classic "lacunar" syndromes?		
a		Anterior inferior cerebellar artery
b		PCA
c	*	Lenticulo-striate artery
d		Vertebral artery
e		None of the above
Which of the following is the most important risk factor for Alzheimer's Disease?		
a	*	Age
b		Down syndrome
c		Family history
d		Female gender
e		None of the above
Which of the following is associated with "locked-in syndrome"?		
a		ALS
b		Central pontine myelinolysis
c		Vertebral artery dissection
d		Bilateral carotid artery occlusion
e	*	A, B and C
Neologisms are part of which of the following?		
a		Motor aphasia
b	*	Receptive aphasia
c		Transcortical motor aphasia
d		Lewy body dementia
e		All of the above
A 34-year-old male presents with intermittent dizziness, nausea, vomiting, and hearing loss. The patient also complains of ear fullness and ringing in his ear. What is the most likely etiology?		
a		Trauma
b		Syphilis
c		Idiopathic
d	*	All of the above
e		None of the above
What is the most common cranial neuropathy associated with berry aneurysm?		

a		CN II
b	*	CN III
c		CN IV
d		CN X
e		All of the above
What is the major difference between a subdural hematoma and an epidural hematoma on CT scan?		
a		The subdural hematoma will look isodense
b	*	The epidural will have a lens-shaped convex hyperdensity
c		The subdural will have a crescent-shaped concave hypodensity
d		There is no difference shown by CT scan to distinguish the two
e		None of the above
An 87-year-old male presents to your clinic with resting tremor in both hands, stooped posture, and masked facies. What is the most likely cause of his symptoms?		
a		Serotonin depletion in the raphe nucleus
b	*	Dopamine depletion in the substantia nigra
c		Copper depletion in the reticular activating system
d		B12 deficiency
e		None of the above
A 56-year-old male presents with hearing loss, tinnitus, vertigo, and disequilibrium.Which of the following could be a potential cause?		
a		Excessive growth of astrocytes
b	*	Excessive growth of Schwann cells
c		Acetazolamide therapy
d		Cavernous sinus thrombosis
e		None of the above
A 34-year-old male presents with a long-standing history of abnormal movements, aggressive behavior, and memory difficulties. There is a strong family history of similar symptoms, and his father had committed suicide at age The patient is extremely irritable and demonstrates antisocial behavior. What would be the most likely finding on magnetic resonance imaging (MRI)?		
a		Hydrocephalus
b		Frontal lobe infarct
c		Arnold-Chiari malformation
d	*	Diffuse atrophy; more prominent in the caudate and putamen
e		None of the above
A 74-year-old male with a history of cancer presents with new-onset seizures and focal deficits on his left side that have gradually worsened. His cancer had been in remission but has spread to his liver and bone. He had an MRI of his brain, which demonstrated multiple lesions consistent with metastatic disease. They were primarily located at the gray-white junction. What type of cancer does the patient most likely have?		
a		Squamous cell carcinoma
b	*	Small cell carcinoma of the lung
c		Meningioma
d		Prostate carcinoma
e		Leukemia
A 54-year-old male presents in a coma. He is found to have a severe subarachnoid bleed with left-sided uncal herniation. What is the most likely examination finding to confirm this?		
a		Right-sided paralysis
b		Left-sided paralysis
c	*	Left mydriatic pupil; this is nonreactive
d		Right miotic pupil
e		Tongue deviation to the right
A 74-year-old male presented with a history of resting tremor in his right hand, rigidity of his lower extremities, slow gait, and occasional falls. Which of the following could not have caused this man’s symptoms?		

a		History of encephalitis
b		Manganese ingestion
c	*	Ethylene glycol
d		History of anoxic brain injury
e		Metoclopramide
A 67-year-old female presents with a 3-week history of headaches and low-grade fever. She states she has had scalp tenderness over her left eye and occasional jaw claudication. The reason she came into the hospital now is that she has lost vision in her left eye. Which vessel is the cause of her symptoms?		
a		Left ophthalmic artery
b		Right carotid artery
c	*	Left central retinal artery
d		Left central retinal vein
e		Left MCA
A 34-year-old male presents with rapid onset of diplopia, difficulty swallowing, and weakness that started in his arms and progressed downward. His pupils are dilated and non-reactive. You find out that he had recently eaten a can of soup that caused some diarrhea the day prior. What is the most likely cause of his symptoms?		
a	*	Difficulty for acetylcholine to be released
b		Difficulty for acetylcholine to bind to the postsynaptic area
c		Difficulty for norepinephrine reuptake
d		Poor ATP release
e		Defective glucose metabolism
A 69-year-old male presented with a 5-year history of progressive apathy, emotional lability, inappropriate behavior, and difficulty balancing his checkbook. He also stopped playing golf, which was his favorite hobby. An MRI demonstrated atrophy marked in the temporal region and frontal region. What is the pathologic hallmark for this disease?		
a	*	Argentophilic pick bodies
b		Neurofibrillary tangles
c		Spongiform changes to the gray matter
d		Loss of dopamine cells in the substantia nigra
e		Hippocampal atrophy bilaterally
A 82-year-old male with a long-standing history of dementia has been placed on an acetylcholinesterase inhibitor with some improvement of his symptoms. The area of the brain most likely involved is:		
a		Caudate
b		Raphe nucleus
c	*	Nucleus basalis of Meynert
d		Brodmann’s area 41
e		Edinger-Westphal nucleus
A 49-year-old woman presents with sudden onset of left-sided facial weakness, hearing loss, and ear pain for 2 days. On examination, she has a vesicular rash on her left ear and sensorineural hearing loss on the left, as well as left face weakness. What is the most likely diagnosis?		
a		Carcinomatous meningitis
b	*	Ramsay Hunt syndrome
c		HHV-6
d		HTLV-1
e		None of the above
A 27-year-old man with a history of HIV presents with 3 weeks of dysarthria and progressive left-sided weakness. He has been noncompliant with his antiretroviral medications. His last CD4 count was An MRI brain scan demonstrated large confluent areas of T2 hyperintensities in the subcortical white matter bilaterally consistent with severe demyelination. Diffusion-weighted images were negative. An LP was performed and demonstrated normal opening pressure, normal cell count, glucose, and protein. CSF polymerase chain reaction (PCR) for John Cunningham (JC) virus was positive. What is the most likely location of this virus?		
a		Astrocytes
b		Macrophages

c		Schwann cells
d	*	Oligodendrocytes
e		Basket cells
A 60-year-old man with a history of untreated venereal disease complains of sudden lancinating pain in both legs. On examination, the patient has unequal pupils. The involved pupil does not react to light but constricts during accommodation. Sensory examination reveals decreased vibration and joint position sense. The patient exhibited a mild decrease in sensation to pinprick and temperature. Absent reflexes and a wide-based gait were demonstrated. Laboratory findings showed that his rapid plasma regain was positive and FTA-ABS was also positive. An LP demonstrated increased lymphocytes, elevated protein, and positive Venereal Disease Research Laboratory results (VDRL) in the CSF. The patient's eye findings are known as:		
a		Marcus-Gunn pupil
b		Adie's pupil
c	*	Argyll-Robertson pupil
d		tonic pupil
e		There is no known name for his eye findings
A 43-year-old right-handed woman presents with a 6-month history of numbness and tingling in her right hand (particularly in her first three digits). She denies any symptoms in her palm or her fourth or fifth digit. She types all day at a computer and states her symptoms are worse at night and when she wakes up in the morning. What is the most likely location of her problem?		
a		Anterior cruciate ligament
b	*	Flexor retinaculum
c		Antecubital fossa
d		Right brachial plexus
e		C6 root
A 75-year-old woman presents with an unsteady gait, generalized weakness, fatigue, and a burning sensation in her tongue. On examination, she is found to have bilateral weakness and decreased positional sense in her legs more than her arms. She has diminished reflexes and a positive Babinski reflex. She also has a positive Romberg's test. Which of the following conditions is associated with her problem?		
a	*	Atrophic gastritis
b		Decreased ferritin
c		Abnormal copper metabolism
d		Niacin deficiency
e		Elevated homocysteine
What is the most common cranial nerve palsy associated with subarachnoid hemorrhage?		
a		CN II
b		CN IV
c		CN VI
d	*	CN III
e		All cranial nerves can be equally involved
A 34-year-old woman presents with an acute onset of vertigo, nausea, and vomiting. She also complains of pain and numbness on the right side of her face as well as difficulty with swallowing. On examination, she falls to the right and has decreased pain and a decrease in the left hand's skin temperature. She has nystagmus in all directions, which is worse when looking to the right. The patient also has ptosis on the right eyelid, and her right pupil is smaller in diameter than her left along with decreased sweating on the right side. What is the most likely involved artery?		
a		PCA
b		MCA
c		Anterior cerebral artery (ACA)
d	*	Posterior inferior cerebellar artery (PICA)
e		Anterior inferior cerebellar artery (AICA)
What is the characteristic lesion seen in the arteries in amyloid angiopathy?		
a		Silver stain amyloid
b		Congo-red positive amyloid

c		Apple-green birefringence under polarized light
d	*	B and C
e		A and C
What two structures make up the lentiform nucleus?		
a		Caudate and thalamus
b	*	Globus pallidus and putamen
c		Globus pallidus interna and externa
d		Substantia nigra and putamen
e		None of the above
What is the most common cause of basal ganglia calcifications?		
a	*	Fahr's disease
b		Huntington's disease
c		Wilson's disease
d		Carbon dioxide poisoning
e		None of the above
The parasympathetic fibers that control papillary constriction arise from?		
a	*	CN III
b		CN IV
c		Superior cervical chain
d		Vagus nerve
e		None of the above
A 76-year-old man presents with sudden onset of monocular blindness in his left eye as well as difficulty seeing objects in his right lateral field.What is the most likely location of his lesion?		
a		Right optic nerve
b		Left distal optic nerve
c		Optic chiasm
d	*	Left proximal optic nerve
e		Right temporal lobe
Which of the following cranial nerves is the smallest?		
a		CN I
b	*	CN IV
c		CN XII
d		CN V
e		All of the above
An 87-year-old male presents with a sudden onset of unresponsiveness. During examination, he is found to have absent corneal reflex. What are the most likely nerves involved?		
a		CN II and III
b		CN IV and VI
c	*	CN V and VII
d		CN VII and III
e		None of the above
A 54-year-old female presents with left facial weakness (both upper and lower), a change in her taste sensation, and increased auditory sensitivity. What is the most likely cause of these symptoms?		
a		Idiopathic
b		Herpes zoster
c		JC virus
d	*	A and B
e		B and C
A 34-year-old female with refractory seizures was recently treated with a vagus nerve stimulator. The patient returns to the office with continued complaints of hoarseness in her voice. She denies any problems with swallowing. On examination, she does not have difficulty elevating her uvula or soft palate. What is the most likely nerve involved?		

a		Glossopharyngeal n.
b	*	Recurrent laryngeal n.
c		Accessory n.
d		Hypoglossal n.
e		Trochlear n.
A 45-year-old male presents with weakness. On examination, there is winging of his scapula. What is the most likely nerve involved?		
a		Pectoral n.
b		Anterior thoracic n.
c	*	Long thoracic n.
d		Dorsal scapular n.
e		Axillary n.
A 78-year-old female with left hand numbness is sent for electromyography/ nerve conduction studies. She is noted to have a Martin-Gruber anastomosis. What nerves are involved?		
a	*	Ulnar n. and median n.
b		Radial n. and brachial n.
c		Axillary n. and ulnar n.
d		None of the above
e		All of the above
A 23-year-old man presents with severe pain in his left shoulder. He had a recent viral infection. His left arm is numb, weak, and has severe pain with movement. What is the most likely cause of his symptoms?		
a	*	Parsonage-Turner syndrome
b		Erb-Duchenne syndrome
c		Guillain-Barré syndrome
d		Lambert-Eaton myasthenic syndrome
e		All of the above
Muscle contraction is a complex phenomenon. The electrolyte mostly involved and stored in the sarcoplasmic reticulum is:		
a		Sodium
b		Potassium
c	*	Calcium
d		Magnesium
e		None of the above
The Golgi tendon organ is in a series in the muscle in contrast to muscle spindles that are in parallel. True or false?		
a	*	True
b		False
In a lesion of CN XII, the way to differentiate an upper motor neuron (UMN) lesion versus a lower motor neuron (LMN) lesion is:		
a	*	The tongue deviates away from the lesion in the UMN
b		The tongue deviates toward the side of the lesion in the UMN
c		The tongue deviates away from the lesion in the LMN
d		It is impossible to tell without an MRI
e		All of the above
An 18-year-old male comes to the office with his caretaker. He has a history of perinatal damage to his basal ganglia resulting in glial scars that resembles “marbles.” What is the name of this disorder?		
a		Striatonigral degeneration
b	*	Status marmoratus
c		Hallervorden-Spatz disease
d		Status lacunaris
e		None of the above
What are the classic symptoms associated with migraine headaches?		

a		Anxiety
b		Numbness
c	*	Throbbing
d		None of the above
e		All of the above
A 23-year-old female presents with onset of headache on one side, which spreads to involve the whole side of her head. She describes it as pulsatile, and it stays on one side. The headache is usually self-limiting lasting 30 minutes to a few hours. What is the most likely diagnosis?		
a		Occipital migraine
b		Cluster headache
c	*	Classic migraine
d		Tension headache
e		None of the above
What is the most common headache type?		
a	*	Tension headache
b		Classic headache
c		Vasospastic migraine
d		Low pressure headache
e		All of the above
What is the ratio of men to women affected by cluster headaches?		
a		1:1
b		2:1
c	*	5:1
d		3:2
e		1:4
What percentage of migraine sufferers are women?		
a		10%
b		25%
c		50%
d	*	75%
e		None of the above
Which of the following is not a type of vascular headache?		
a		Migraine
b		Toxic
c	*	Tension
d		Cluster
e		All of the above are vascular headaches
A 34-year-old female presents with daily headache. She has been taking ibuprofen 800 mg three to four times a day. She also drinks four cups of coffee per day. She states she used to have headaches on the left side of her head but now the pain is diffuse and bilateral. What is the best treatment for this type of headache?		
a		Triptan
b		Oxygen
c	*	Stop ibuprofen
d		Increase her caffeine intake
e		Get more sleep
A 40-year-old male presents to the emergency department (ED) with a severe, stabbing, burning, and throbbing headache. He describes the pain as piercing and unbearable. He also describes a runny nose on the same side as his headache. This happened once about 6 months ago but went away naturally. He was given oxygen and a sumatriptan, which provided pain relief. What is the most likely neuropeptide involved?		
a		Acetylcholine
b		Dopamine
c	*	Histamine

d		Aldosterone
e		Melatonin
Which of the following is the most common aura associated with tension headaches?		
a		Zig-zag lines
b		Blurry vision
c		Taste change
d		Strange smell
e	*	None of the above
A 35-year-old female presents with chronic daily headache and depression.She reports severe tenderness on her scalp and neck. She also complains of pain with neck flexion. She denied any visual changes, and the rest of her neurologic examination was normal. She works in an office and sits in front of a computer all day. She does drink one cup of coffee per day but does not associate her headaches with this. She also states her son recently was evicted out of his apartment. She denies taking any over-thecounter medications for this pain. Which of the following is not a cause of her headache?		
a		Stress or anxiety
b		Depression
c		Poor posture
d	*	Caffeine
e		All of the above
In the patient above, what is the best first-line treatment?		
a		Exercise
b		Adequate sleep
c		Cognitive behavioral therapy
d		Nonsteroidal anti-inflammatory drugs (NSAIDs)
e	*	All of the above
A 45-year-old tall, rugged man presents with severe headaches that debilitate him once a year. He states that oxygen is the only treatment that helps. He is diagnosed with cluster headaches. What is the most likely mode of inheritance?		
a		Autosomal recessive
b		X-linked dominant
c	*	Sporadic
d		Anticipation
e		None of the above
Which of the following has recently been associated with increased attack frequency and severity of migraines?		
a		Hypertension
b		Chronic renal insufficiency
c	*	Obesity
d		Diabetes
e		None of the above
The development of cutaneous allodynia during a migraine attack is due to sensitization of?		
a		Basal ganglia
b	*	Trigeminal nucleus
c		Dorsal column
d		Supplementary sensory area
e		None of the above
Which of the following medication is not effective during allodynia during a migraine?		
a		Parental COX-1 inhibitor
b		Parental COX-2 inhibitor
c	*	Triptans
d		All of the above are effective.
e		All of the above
Which of the following combinations has recently been found to be more effective than monotherapy for the		

treatment of migraines?		
a		Triptan/opiate
b	*	NSAID/triptan
c		NSAID/opiate
d		DHE/opiate
e		None of the above
The new international classification of headache disorders classifies chronic migraine as:		
a		Seven days of continuous migraine
b	*	Fifteen days or more for 3 or more months without medication overuse
c		One month of medication overuse
d		Forty-five days of continuous migraine
e		None of the above
Which group is affected by idiopathic intracranial hypertension?		
a		Young teenage men
b		Postmenopausal women
c	*	Overweight women of childbearing age
d		Overweight men
e		All of the above
Which of the following is the most serious complication of idiopathic intracranial hypertension?		
a		Brain death
b		Stroke
c	*	Visual loss
d		Headache
e		Nausea and vomiting
What approximate percentage of women have recurrence of idiopathic intracranial hypertension?		
a		10%
b	*	35%
c		75%
d		100%
e		None of the above
A 19-year-old obese female with sixth nerve palsy presents to the ED, complaining of a severe headache. The most likely opening pressure on her LP would be?		
a	*	>20 cm H2O
b		5 cm H2O
c		10–15 cm H2O
d		<5 cm H2O
e		None of the above
In the above patient, what would be the best first line of treatment?		
a		Optic nerve fenestration
b		Dietitian
c		Diuretics
d		A and C
e	*	B and C
A 23-year-old female with a recent diagnosis of idiopathic intracranial hypertension presents to the ED with worsening blurry vision. She has been on steroids, acetazolamide, and furosemide in the past without relief. Which surgical option is the most effective treatment?		
a		Optic nerve sheath fenestration
b	*	Cerebrospinal fluid (CSF) diversion procedure
c		Burr hole
d		Lumbar fusion
e		Laser surgery
What percentage of patients presenting to a neurologist with idiopathic intracranial hypertension have		

headaches?		
a		5%
b		25%
c		75%
d	*	99%
e		50%
Which of the following has been associated with causing or worsening idiopathic intracranial hypertension?		
a	*	Tetracycline
b		Acetazolamide
c		Furosemide
d		Lumbar puncture
e		None of the above
Which of the following best represents episodic focal neurologic symptoms without headache or vomiting?		
a		Hemiplegic migraine
b		Carotidynia
c	*	Migraine equivalent
d		Cluster headache
e		None of the above
Which of the following fits the current theory of the cause of migraine?		
a		Vasodilatory mechanism
b		Interleukin 1, 6, and 11 mediated
c	*	Spreading depression
d		Histamine mediated
e		Acetylcholine mediated
Which of the following frequency of headaches would prophylaxis treatment indicate?		
a		Once a month
b		Perimenstrual
c	*	Once a week
d		Stress related
e		None of the above
What percentage of patients that complain of severe head pain after coughing, sneezing, or lifting have an Arnold-Chiari malformation?		
a		100%
b		10%
c	*	25%
d		50%
e		75%
Which of the following chromosomes has been linked to hemiplegic migraine?		
a		1
b		10
c	*	19
d		15
e		None of the above
What percentage of Americans suffer from insomnia (both acute and chronic)?		
a		10%
b	*	40%
c		90%
d		<1%
e		None of the above
A 75-year-old man complains of difficulty falling asleep for the past 2 years. He was started on zolpidem by his primary care physician at that time and has been taking it since then. He states he is not sure if it is still helping and feels fatigued during the day. He goes to bed at the same time every night and lies in bed for hours thinking		

about things, watching the clock. The patient states he sleeps better at his sister's house. He denies any depression but does feel some anxiety about going to bed. He does watch TV in bed. About 2 years ago, he mentioned he had a significant amount of stress when his wife was sick, but she is much better now. What is the most likely diagnosis?		
a		Sleep apnea
b		Circadian rhythm disorder
c		Idiopathic insomnia
d		Depression
e	*	Psychophysiologic insomnia
A 22-year-old man comes to the office complaining of difficulty sleeping and daytime tiredness, which started right after college. His usual bedtime is 10:00 PM, but he cannot fall asleep until 1:00 or 2:00 AM, and then he wakes up for work around 6:00 AM. The patient states that on the weekends, he can stay in bed until 11:00 AM or noon, and he goes to bed around 2:00 AM. He does feel better on the weekends. He does not snore, is not obese, and had no problems as a child. The patient also denies any recent stressors. What is the best treatment for him?		
a	*	Light therapy
b		Sedative hypnotic
c		Antidepressant
d		Stop working
e		None of the above
Which of the following disorders is most commonly associated with chronic insomnia?		
a		Restless legs syndrome (RLS)
b		Sleep apnea
c		Narcolepsy
d	*	Depression
e		Obsessive compulsive disorder
A 35-year-old female presents to a sleep specialist for difficulty falling asleep and staying asleep over the course of 1 year. The patient also complains of daytime fatigue. She has been diagnosed with attention-deficit hyperactivity disorder (ADHD) in the past but has never been treated. The patient is diagnosed with primary insomnia. What is the best treatment for her?		
a		Stimulant
b		Short-acting sedative hypnotic
c	*	Cognitive behavioral therapy
d		Antidepressant
e		None of the above
Which of the following is not a behavioral therapy for insomnia?		
a		Relaxation therapy
b		Stimulus control
c		Biofeedback
d		Sleep restriction therapy
e	*	All of the above
Of all the treatments for insomnia, sedative hypnotics are commonly used. What length of time is generally recommended for this family of drugs?		
a		Six months
b	*	Less than 1 month
c		At least 1 year
d		Nine months
e		None of the above
A 67-year-old man presents with complaints of "acting out his dreams." He states they are very violent, and his wife has been injured on multiple occasions. He usually recalls the exact dream when his wife wakes him. There are no focal deficits on neurologic examination. He does have an uncle diagnosed with Parkinson's disease. What is the most likely location of this problem?		
a		Cortex

b		Basal ganglia
c	*	Pons
d		Thalamus
e		None of the above
In the above patient, what is the best line of treatment?		
a	*	Clonazepam
b		Selective serotonin reuptake inhibitors (SSRIs)
c		Gabapentin
d		Carbidopa/levodopa
e		There is no treatment
What neurodegenerative disorder may rapid eye movement (REM) behavior disorder be associated with or be the prodrome of?		
a		Alzheimer's disease
b		Huntington's chorea
c		Mitochondrial myopathy
d	*	Parkinson's disease
e		All of the above
Which of the following is required to diagnose RLS?		
a		Polysomnogram
b		History of iron deficiency
c	*	Clinically meeting the four criteria
d		Responsive to dopamine
e		None of the above
Which of the following stages does not change significantly as we age?		
a		Stage I
b		Stage II
c		Delta sleep
d	*	REM stage
e		All of the above
A 16-year-old boy presents with complaints of difficulty sleeping during the school week. On the weekends, however, he is able to fall asleep around 2:00 AM and wakes around noon and feels refreshed. He is diagnosed with delayed sleep phase syndrome. What area of the brain controls this?		
a		Thalamus
b		Parietal cortex
c	*	Hypothalamus
d		Pituitary gland
e		Medulla
With decreased sleep, higher cognitive tasks are affected early and disproportionately. Which of the following is thought to be the reason?		
a		Increased acetylcholine levels
b		Low melatonin levels
c		Microsleep intrusion
d		Visual neglect phenomenon
e	*	C and D
A 12-year-old boy presents with multiple episodes of somnambulism. He almost hurt himself in a recent episode, and therefore his parents came to seek help. When are these episodes likely occurring?		
a		Stage I sleep
b	*	Wakefulness
c		Delta sleep
d		Stage II
e		None of the above
A 54-year-old female with a history of anxiety presents with the sensation to move her legs at night. She is		

diagnosed with RLS. Which of the following treatments would not be appropriate?		
a	*	Fluoxetine
b		Wellbutrin
c		Clonazepam
d		Ropinirole
e		Carbidopa/levodopa
A 17-year-old female presents with excessive daytime sleepiness. She states she falls asleep in school and takes naps frequently that last 20 to 30 minutes and are refreshing. What else in her history could confirm the diagnosis of narcolepsy?		
a		Episodes of sleep paralysis
b		Hypnagogic hallucinations
c	*	Cataplexy
d		All of the above
e		None of the above
A 16-year-old boy is recently diagnosed with narcolepsy with cataplexy. Which of the following neuropeptides is thought to cause this disease?		
a		Increased dopamine
b		Decreased acetylcholine
c	*	Decreased hypocretin
d		Increased interleukin-1
e		None of the above
What percentage of narcoleptics have had to quit working due to their disease?		
a		<1%
b		Almost 10%
c	*	About 25%
d		100%
e		None of the above
Which of the following are required on the polysomnogram to determine REM sleep?		
a		Rapid eye movements
b		Mixed-frequency electroencephalogram (EEG)
c		Atonia on electromyography (EMG)
d		A and C
e	*	All of the above
Which of the following is the most common sleep complaint?		
a		Sleep apnea
b		Narcolepsy
c		RLS
d	*	Insomnia
e		Sleepwalking
Which of the following has been closely associated with narcolepsy with cataplexy?		
a		Chromosome 4q
b	*	HLA-DQB1*0602
c		Chromosome 22
d		X-linked
e		None of the above
A 19-year-old male with a history of narcolepsy with cataplexy presents to your clinic. What is the most likely way to elicit his cataplexy?		
a		Making him jump
b	*	Making him laugh
c		Making him read
d		Making him take a nap
e		None of the above

A 23-year-old female with a long-standing history of narcolepsy with cataplexy presents to your office. She was recently placed on modafinil with significant improvement in her daytime sleepiness, however, she is still having frequent cataplectic attacks. Which of the following agents would help her?		
a		Methylphenidate
b	*	Tricyclic antidepressant
c		Benzodiazepine
d		Clonidine
e		None of the above
A 56-year-old female with chronic insomnia presents to the clinic. She is initiated on melatonin 3 mg about 4 hours before her target bedtime. Where in the brain is melatonin produced?		
a		Hypothalamus
b		Pituitary gland
c	*	Pineal gland
d		Adrenal gland
e		None of the above
A 76-year-old male presents with the inability to maintain attention. He is easily distracted, fidgety, and occasionally mistakes the wires in the room for snakes. This has been going on for 2 days, but there are periods when he is completely alert. Which of the following describes this patient's disease?		
a		Frontotemporal dementia
b		Dementia with Lewy bodies
c	*	Delirium
d		Transient global amnesia
e		None of the above
Which of the following has not been associated with delirium?		
a		Cobalamin
b		Niacin
c		Thiamine
d		Thyroxine
e	*	All of the above are associated with delirium
A 67-year-old woman presents with an acute confusional state. She is diagnosed with a stroke. Which of the following is most likely the location of the stroke?		
a	*	Basal forebrain
b		Anterior inferior cerebellar artery territory infarct
c		Left lateral geniculate
d		Subthalamic nucleus
e		None of the above
A 65-year-old man presents in an acute comatose state. Magnetic resonance imaging (MRI) is performed and shows a stroke affecting his ascending reticular activating system. Which of the following areas would correspond with this lesion?		
a		Right parietal lobe
b		Left occipital lobe
c		Cerebral peduncle
d	*	Tegmentum of the upper pons
e		Basal ganglia
A 40-year-old man presents to the intensive care unit in a comatose state. He is hyperventilating, on arterial blood gas, and there is a metabolic acidosis. Which of the following is probably not the cause of his coma?		
a		Diabetic ketoacidosis
b		Acetaminophen overdose
c		Ethylene glycol ingestion
d	*	Excessive vomiting
e		None of the above
A 35-year-old female who recently ran a marathon in the summer presents in a comatose state. Her core body		

temperature is 41°C. She is diagnosed with heat stroke. What are other possible causes for her hyperthermia?		
a		Wernicke's encephalopathy
b		Adrenal failure
c		Hypothyroidism
d	*	Anticholinergic intoxication
e		None of the above
An 87-year-old man is found unresponsive in his home. On presentation, he has ataxic breathing, fixed pinpoint pupils, absent vestibuloocular reflexes, and has no movement of his extremities. Which of the following is a possible etiology for his coma?		
a	*	Tumor compressing the lower pons
b		Stroke to the midbrain
c		Herpes encephalitis
d		Bilateral thalamic infarcts
e		None of the above
A 76-year-old man presents to the emergency department (ED) with Cheyne-Stokes respiration, which started acutely. On computed tomography (CT) scan of his head, bilateral parietal lobe infarcts are seen in the middle cerebral artery (MCA) distribution. Which of the following could also cause a similar breathing pattern?		
a		Right posterior cerebral artery infarct
b		Alcohol intoxication
c	*	Cardiomyopathy
d		Opiate overdose
e		None of the above
A 34-year-old female presents to the ED in a deep coma. Which of the following skin lesions would support that she had severe head trauma?		
a		Hypermelanosis
b		Icterus
c	*	Battle's sign
d		Ecthyma gangrenosum
e		None of the above
A 19-year-old female presents to the ED with severe head injury due to a recent motor vehicle accident. Her Glasgow coma scale is Which of the following is not possible for her to be performing?		
a		Extension response to pain
b		Incomprehensible sounds
c		Eyes open in response to pain
d	*	Inappropriate words
e		None of the above
A 56-year-old female found unresponsive is brought to the ED. On examination, she is found to have decorticate posturing. Which of the following is consistent with this condition?		
a	*	Flexion at the elbow, plantar lower extremity extension
b		Upper extremity extension, lower extremity extension
c		Flexion at the wrist and fingers, lower extremity flexion
d		All of the above
e		None of the above
Which of the following is most likely the location of the lesion that may cause decerebrate posturing?		
a		Thalamus
b		Caudate
c	*	Red nucleus
d		Cerebellar peduncle
e		Medial longitudinal fasciculus
A 56-year-old male with a history of multiple psychiatric hospitalizations was recently admitted to the psychiatric ward with acute psychosis. He was given multiple doses of haloperidol. On the third day of admission, he developed a fever, increased bilateral muscle rigidity, and then went into a coma. Which of the		

following is the best next step?		
a		Place cooling blankets
b		Start dantrolene
c		Check creatine phosphokinase level
d	*	Stop the neuroleptics
e		None of the above
A 42-year-old female with a history of chronic alcohol abuse and hepatitis C presents with a decreased level of consciousness. She is found on examination to have a tremor in her extremities and elevated ammonia levels in her blood. Which of the following describes the type of tremor she most likely has?		
a		Transient increase in postural tone
b	*	Transient decrease in postural tone
c		Occasional twitches of her face
d		A and C
e		None of the above
A 32-year-old man with a history of berry aneurysm that was partially coiled 1 week ago presents in a coma and is completely unresponsive. What physical finding would be pathognomonic for a subarachnoid hemorrhage?		
a		Elevated blood pressure
b		Loss of the vestibule-ocular reflex
c		Pinpoint pupils
d		Roth spots
e	*	Subhyaloid hemorrhage
A 65-year-old man presents after a stroke in the brain stem, and on examination, you find that his pupillary light reflex is impaired and he has an oculomotor palsy. Which of the following could also have caused this?		
a		Syphilis
b		Low vitamin B12
c	*	Herniation of medial temporal structures from an expanding supratentorial mass
d		Thiamine deficiency
e		None of the above
A 36-year-old male presents with pinpoint pupils bilaterally and feels drowsy and nauseated. His sister comes in later and states that he took an overdose of oxycodone. Which of the following could also cause his pupillary changes?		
a	*	Lesion in the pontine tegmentum
b		Bilateral retinal artery occlusion
c		Pilocarpine drops
d		Left carotid artery dissection
e		All of the above
A 76-year-old male presents to the ED with left-sided hemiparesis (worse in the leg than arm) and eye deviation to the left. He has some nystagmus to the left as well and is unresponsive. Which of the following is possible?		
a		Large left frontal lobe lesion
b	*	Seizure
c		Right occipital lobe infarct
d		Tumor in the brain stem
e		None of the above
A 19-year-old man presents in a coma after a major motorcycle accident. His cervical spine is cleared of any fracture. You attempt the oculocephalicv maneuver. If the patient has a positive doll's eye reflex, which of the following would be seen?		
a	*	The eyes do not turn with the head but in the opposite direction
b		The eyes turn with the head in the same direction
c		The left eye turns with the head while the right eye does not turn
d		Both eyes move upward
e		None of the above

Which of the following is required for caloric testing of the doll's eye reflex?		
a		One milliliter of ice cold water
b		Three liters of lukewarm water
c	*	Fifty milliliters of ice cold water
d		Thirty milliliters of lukewarm water
e		None of the above
Which of the following results would be seen in a patient in a psychogenic coma after a cold caloric test?		
a		Sustained deviation of both eyes toward the ear being stimulated
b	*	Eye deviation toward the stimulated ear with nystagmus
c		Sustained eye deviation away from the stimulated ear
d		Temporary eye deviation upward
e		None of the above
A 65-year-old female presents to the toxicology service with an acute overdose of lorazepam and is comatose on examination. On cold caloric testing, there is no response. She has good papillary reflexes. Which of the following could also present these examination findings?		
a		Lyme disease
b		Ethylene glycol
c		Lead toxicity
d		Botulism
e	*	Wernicke's encephalopathy
A 45-year-old man with an acute myocardial infarction presents after cardiac arrest and was resuscitated for 45 minutes. He is currently comatose, and the family would like to know his prognosis. Which of the following examination findings at 24 hours would help support that the outcome would be poor?		
a		Absent ankle reflexes
b	*	Absent bilateral corneal reflexes
c		Roving eye movements
d		Withdraws to noxious stimuli but no localization
e		Pupils pinpoint but reactive
Which of the following occurs first in uncal herniation syndromes?		
a		Ipsilateral hemiplegia
b	*	Third cranial nerve palsy
c		Decerebrate posturing
d		Ataxic breathing
e		None of the above
A 64-year-old female presents to the ED with severe head trauma. Which of the following is not part of Cushing's triad?		
a		Increased intracranial pressure
b	*	Papilledema
c		Hypertension
d		Bradycardia
e		All of the above
A 36-year-old female presents in a metabolic coma. Most metabolic comas present with symmetrical neurologic deficits. Which of the following is often associated with lateralizing motor findings in metabolic coma?		
a		Uremia
b		Elevated ammonia
c	*	Hypoglycemia
d		Hypothyroidism
e		None of the above
Which of the following does not strongly suggest a metabolic coma?		
a		Tremor
b		Multifocal myoclonus
c		Asterixis

d	*	Hemiparesis
e		All of the above
A 21-year-old female presents with cocaine overdose. Which of the following will be seen on pupil examination?		
a		Miosis
b	*	Mydriasis
c		Pinpoint pupils
d		Anisocoria
e		None of the above
A 35-year-old female presents with a drug toxicity of unknown type. Her brother tells you she is on amitriptyline and has a history of cocaine abuse. Which of the following would help you be able to tell that she ingested the amitriptyline?		
a		Hyperthermia
b		Tachycardia
c	*	Dry flushed skin
d		Pupils
e		Diaphoresis
A 76-year-old male presents with an acute embolism to the top of the basilar artery and shows classic signs of locked-in syndrome. All of the following can mimic a patient in chronically locked-in syndrome except:		
a		Severe upper cervical spinal cord lesion
b		End-stage Parkinsonism
c	*	Herpes encephalitis
d		Amyotrophic lateral sclerosis
e		None of the above. They all can present like someone locked in
A 46-year-old female is initially diagnosed with an acute psychotic episode. She has a CT scan of her head, which demonstrates there is a lesion. She is able to follow with her eyes but cannot initiate any other movement. She does not follow any other commands. Her reflexes and tone are intact. What is the most likely diagnosis?		
a		Pontine infarct
b		Syphilis
c	*	Premotor area infarct
d		Frontotemporal dementia
e		None of the above
Which of the following is a distinguishing characteristic that differentiates catatonia from a comatose state?		
a		Fixed eye movements
b		Seizures
c	*	Ability to maintain tone
d		Withdrawal to pain
e		None of the above
Which of the following is NOT used in comatose patients that have been suspected of drug ingestion?		
a		Naloxone
b	*	Mannitol
c		Flumazenil
d		Activated charcoal
e		None of the above
A 19-year-old female presents in a comatose state. On examination, she is noted to have papilledema. She also presents with a fever, and her family states there was another student at her college diagnosed with bacterial meningitis. Which of the following is the next best step?		
a		Electroencephalogram (EEG)
b		Lumbar puncture
c	*	CT scan of head
d		Blood cultures

e		None of the above
Which of the following is an acute encephalopathy?		
a		Frontotemporal dementia
b		Anton's syndrome
c		Korsakoff syndrome
d	*	Wernicke's encephalopathy
e		None of the above
A 36-year-old male with a history of chronic alcohol abuse presents with ophthalmoplegia, confusion, and gait ataxia. Which of the following has not been associated with this condition?		
a		Anorexia nervosa
b		Prolonged parental nutrition
c		HIV
d	*	Megaloblastic mania
e		All of the above are associated
What percentage of patients with Wernicke's encephalopathy has been associated with an atrophic mamillary body?		
a		10%
b		50%
c	*	80%
d		100%
e		None of the above
A 65-year-old man presents with a history of malabsorption due to a colon resection many years ago for colon cancer. He exhibits confusion, lateral rectus palsy, nystagmus, and an unsteady gait. The patient is diagnosed with thiamine deficiency. Which of the following symptoms of Wernicke's encephalopathy occasionally precedes the other symptoms?		
a		Nystagmus
b		Lateral rectus palsy
c	*	Ataxia
d		Encephalopathy
e		None of the above
Toxic metabolic encephalopathies are extremely common. Which of the following patients in the intensive care unit are at the greatest susceptibility to develop this encephalopathy?		
a		A 50-year-old male with multiple medical problems
b		An 18-year-old male intubated for 4 weeks
c	*	A 75-year-old male with history of mild dementia
d		A 45-year-old male with no past medical history
e		None of the above
A 34-year-old female with a history of depression presents to the intensive care unit with an overdose of acetaminophen. What percentage of patients with acute hepatic encephalopathy have cerebral edema?		
a		<1%
b		25%
c		50%
d	*	80%
e		99%
A 32-year-old male marathon runner presents with impaired mental status and develops nausea and malaise. He also developed headaches and then became lethargic. The patient is diagnosed with hyponatremia. Which of the following sodium levels corresponds to when he developed nausea and malaise?		
a		145 mEq/L
b		135 mEq/L
c	*	120 mEq/L
d		155 mEq/L
e		None of the above

A 67-year-old male has been in the intensive care unit in a comatose state and is diagnosed with brain death. Which of the following is a prerequisite before anyone can even contemplate the diagnosis?		
a		The cause of the brain death should be known
b		Exclusion of any complicating medical condition that may confound clinical assessment (i.e., no severe electrolyte imbalance)
c		No drug intoxication or poisoning that may impair the clinical assessment
d		The core body temperature is greater than or equal to 32°C.
e	*	All of the above are prerequisites
Which of the following would exclude brain death?		
a		Absent gag reflex
b		Absent corneal reflex
c		Coma
d		Triple flexion response with foot stimulation
e	*	None of the above
Which of the following meets the criteria for a positive apnea test in brain death?		
a		Absent respiratory response with a PaCO2 >45 mm Hg
b	*	Absent respiratory response to PaCO2 >60 mm Hg
c		Breathing below the ventilator
d		Ten-second or longer stoppage of breathing
e		None of the above
What is the number of hours in between examinations and physicians required for brain death in the United States?		
a		72;3
b	*	6;2
c		96;1
d		1;2
e		None of the above
Which of the following is the traditional “gold standard” test for brain death?		
a		Transcranial Doppler
b		Carotid ultrasound
c	*	Cerebral angiography
d		CT angiography
e		None of the above
A 56-year-old male presents to the emergency department (ED) after severe head trauma. After two physicians examine him, and after a positive apnea test, the patient is confirmed brain dead. Which of the following has been misdiagnosed with brain death?		
a		Locked-in syndrome
b		Hypothermia
c		Drug intoxication
d		Guillain-Barré syndrome
e	*	All of the above
A 60-year-old man presents to the emergency department (ED) after cardiac arrest. It was reported that cardiopulmonary resuscitation (CPR) was performed for approximately 25 minutes. What is the likelihood that the patient will survive after 6 weeks?		
a		44%
b		30%
c		13%
d	*	<1%
e		None of the above
Which of the following improves neurologic outcome after cardiac arrest?		
a		Administer mannitol
b	*	Hypothermia

c		Craniectomy
d		Magnesium infusion
e		Thiamine IV
Which of the following is required in brain death criteria in the United States?		
a		EEG
b		MRI
c		Transcranial Doppler
d		Lumbar puncture
e	*	None of the above
What percentage of people in the United States older than 80 have Alzheimer's dementia (AD)?		
a		5%
b		25%
c	*	40%
d		75%
e		None of the above
Which of the following areas is most involved in AD?		
a		Occipital lobe
b		Basal ganglia
c		Pons
d	*	Medial temporal lobe
e		None of the above
Which of the following is not seen in AD?		
a		Granulovacuolar degeneration
b		Neuropil threads
c		Neuronal loss and synaptic degeneration
d		Neurofibrillary tangles
e	*	All of the above
Which of the following structures is most affected by neurofibrillary tangles?		
a	*	Entorhinal cortex
b		Caudate
c		Layer III of the parietal lobe
d		Cerebral peduncle
e		None of the above
A 76-year-old male with a history of dementia presents to your office. He seems to be doing well, and his caretaker confirms this. Which of the following most likely will cause this patient's death?		
a		Myocardial infarction
b		Stroke
c		Motor vehicle accident
d	*	Pneumonia
e		All of the above
What percentage of AD is familial?		
a	*	10%
b		35%
c		75%
d		100%
e		None of the above
Which of the following is the most common presenting symptom in AD?		
a		Focal weakness
b		Gait disturbance
c		Urinary incontinence
d		Language difficulty
e	*	Memory problems

Which of the following needs to be excluded to diagnose AD?		
a		Syphilis
b		Hypothyroidism
c		Stroke
d		Cobalamin deficiency
e	*	All of the above
Which of the following is associated with a variant of AD?		
a		Urinary incontinence
b	*	Spastic paraparesis
c		Right facial droop
d		Ataxia
e		None of the above
A 76-year-old male is sent to your clinic for evaluation of AD. You have ruled other possible causes and diagnose him with AD. Which of the following is associated with this condition?		
a		Presenilin IV
b		Chromosome 2
c	*	Amyloid precursor protein
d		Alpha-amyloid peptide
e		None of the above
Which of the following chromosomes has been associated with the amyloid precursor protein?		
a		Chromosome 14
b		Chromosome 1
c	*	Chromosome 21
d		X-linked
e		None of the above
Which of the following statements is true regarding AD?		
a	*	No intervention has been shown to prevent AD or slow its progression
b		N-methyl-D-aspartate (NMDA) antagonists are extremely effective
c		Cholinesterase inhibitors are third-line agents for the treatment of AD
d		Psychotropic medications should always be avoided in AD patients
e		None of the above
An 87-year-old female with severe AD presents with extreme anger and rage. Which of the following medications has been approved by the FDA for the treatment of behavioral changes in AD?		
a		Haloperidol
b		Risperidone
c		Gabapentin
d		Quetiapine
e	*	None of the above
Which of the following should be part of the routine work-up for dementia?		
a		Complete blood count
b		Cobalamin
c		Liver enzyme
d		Cortisol
e	*	All of the above
A 65-year-old male presents with a long-standing history of dementia. He is seen by a specialist and is recommended to have further testing to help confirm AD. Which of the following tests could be ordered?		
a		Serum ferritin
b	*	Cerebrospinal fluid (CSF)-tau levels
c		CSF hypocretin-1
d		Serum amyloid
e		None of the above
A 90-year-old female presents with a history of AD for 10 years. She has steadily progressed over the past 10		

years requiring all her ADLs and language deficit. Which of the following anatomical locations would be most depleted or damaged in this patient?		
a		Nucleus solitarius
b	*	Basal nucleus of Meynert
c		Reticular nucleus of the thalamus
d		Medial geniculate nucleus
e		None of the above
NMDA antagonists are often used to treat AD. In which of the following scenarios would this drug be favored over cholinesterase inhibitors?		
a		Parkinson's disease
b		Late-stage AD
c		Hepatic encephalopathy
d		Huntington's disease
e	*	B and D
A 63-year-old female with a recent diagnosis of AD presents to the clinic. Her husband states she has become very depressed lately. She is initiated on an antidepressant. Which of the following is the percentage of patients with AD that have depression as well?		
a		5%
b	*	31%
c		70%
d		99%
e		None of the above
A 71-year-old man presents with his son for the treatment of AD. His son states that he has been placed on memantine, and they have seen good results. Which of the following could also be done as an adjunct to help his father?		
a		Increase the memantine
b	*	Provide the patient with brainteaser puzzles
c		Add cholinesterase inhibitor
d		Use diphenhydramine to help his father sleep
e		None of the above
Which of the following is the main difference between AD in Down syndrome and AD in the general population?		
a		Patients with Down syndrome do not have amyloid deposits
b	*	In Down syndrome patients, dementia occurs at an earlier age
c		Down syndrome patients have Lewy body deposition as well
d		All of the above
e		None of the above
Which of the following is part of a theory regarding why Down syndrome patients develop AD?		
a		They often graduate college
b		Trisomy 2
c		Someone else in the family has AD
d	*	Cognitive reserve hypothesis
e		None of the above
A 35-year-old male with Down syndrome is starting to develop memory difficulty. He wants to know how long he may live. What would you tell him?		
a		About 1 year
b	*	At least 10 years
c		More than 50 years
d		Less than 6 months
e		None of the above
A 21-year-old man with Down syndrome presents with increasing aggression. He is also noted to be very stubborn and refuses to do his chores. His parents are extremely frustrated. His neurologic examination is		

unchanged, and he denies any headaches or visual changes. His parents state there is nothing else wrong. Which of the following is the most likely cause of this patient's symptoms?		
a		Lack of sleep
b	*	Exaggeration of a previous long-standing trait
c		Stroke
d		Behavioral changes are not usually seen in Down syndrome, and therefore looking for a structural lesion is crucial
e		None of the above
A 45-year-old female with Down syndrome presents with advanced-stage dementia. Which of the following would most likely demonstrate her current condition?		
a		Decreased muscle tone
b	*	Vegetative state
c		Some mild language difficulty
d		Able to perform some ADLs
e		None of the above
For patients with AD with or without Down syndrome, which of the following is the most important risk factor for AD?		
a		Presence of trisomy 21
b	*	Age
c		Family history of AD
d		Small head circumference
e		History of multiple concussion
Which of the following has been associated with decreased risk of AD?		
a		Stroke
b		Low IQ
c	*	Mediterranean diet
d		Sedentary lifestyle
e		None of the above
Which of the following is associated with aphasia?		
a	*	Left middle cerebral artery (MCA) territory stroke involving Broca's area
b		Developmental disorders of language
c		Stuttering
d		Schizophrenia-associated language difficulty
e		All of the above
What percentage of left-handed people have language control in their left hemisphere?		
a		<1%
b		15%
c	*	60%
d		100%
e		None of the above
A 56-year-old man presents with difficulty expressing himself and righthanded weakness. What percentage of patients develop aphasia due to stroke?		
a		5%
b	*	20%
c		75%
d		99%
e		None of the above
Which of the following statements regarding gender and aphasia is true?		
a		Women develop aphasia more than men
b		Men are equal to women in developing aphasia
c		Men develop Wernicke's aphasia more than women do
d	*	Women develop aphasia less than men

e		None of the above
Which of the following is considered part of aphasic syndromes?		
a		Global
b		Conduction
c		Aphemia
d		Anomic
e	*	All of the above
In the previous question, which choice is considered the most common and most widely understood and accepted?		
a		Global
b	*	Conduction
c		Aphemia
d		Anomic
e		All of the above
A 77-year-old male presents with acute onset of confusion. He is later found to have aphasia. Which of the following are good language tests to help elucidate his aphasia?		
a		Boston Diagnostic Aphasia Examination
b		Token test
c		Action Naming Test
d		Western Aphasia Battery
e	*	All of the above
Which of the following is not a common bedside test for aphasia?		
a		Naming
b		Repetition
c		Comprehension
d	*	Pursuit
e		All of the above
A 65-year-old female who presented with a recent stroke to her left temporal- parietal region is being evaluated. She is asked to name as many animals as she can think of in 1 minute. Which of the following area is being assessed during this test?		
a		Occipital lobe
b	*	Frontal lobe
c		Right parietal lobe
d		Brain stem
e		None of the above
A 56-year-old male is being evaluated for acute aphasia. He has severe difficulty with repetition. What is the most likely location of his deficit?		
a		Left mesial temporal region
b		Right thalamus
c	*	Perisylvian region
d		Nonperisylvian region
e		None of the above
A 46-year-old female with atrial fibrillation presents with a right hemispheric stroke. She has difficulty attending to her left and misses reading the left side of the book. Which of the following accurately describes her?		
a		Neglect apraxia
b	*	Neglect dyslexia
c		Aphemia
d		Agraphia without acalculia
e		None of the above
A 72-year-old man presents with nonfluent aphasia. Which of the following would help support the location of the lesion?		

a		Left hemiparesis
b	*	Buccofacial apraxia
c		Urinary incontinence
d		Acalculia
e		None of the above
With Broca's aphasia, where is the most likely location of the lesion?		
a		Posterior temporal horn
b		Cingulate gyrus
c	*	Inferior frontal gyrus operculum
d		Posterior parietal lobe
e		None of the above
A 56-year-old female with recent left MCA distribution infarct is diagnosed with Wernicke's aphasia. Primarily, she is found to have word substitution difficulty but has other deficits as well, consistent with the lesion. Which of the following is true?		
a		Comprehension of language is intact
b		Naming is impaired but repetition is intact
c	*	Neologism may be present
d		Grammar is not as preserved as it is in Broca's aphasia
e		None of the above
Patients with Wernicke's are not always aware of their deficits. They are often mistaken to be confused and sometimes even psychotic. Which of the following is true?		
a	*	The lesion usually involves the posterior one third of the superior temporal gyrus
b		Wernicke's aphasia is often due to a stroke involving the left anterior cerebral artery
c		The amount of recovery from Wernicke's aphasia is independent of age
d		Superior quadrantanopsia is not a helpful sign in Wernicke's aphasia
e		None of the above
Lesions of the occipital gyrus or fusiform gyrus would result in what deficit?		
a		Difficulty in naming inanimate objects
b		Impaired verb naming
c	*	Impaired ability to name living things
d		A and B
e		None of the above
A 54-year-old female presents with an acute aphasia. She is found to have conduction aphasia. Which of the following is a hallmark feature?		
a	*	Repetition impairment
b		Nonfluent aphasia
c		Right hemiparesis
d		Right hearing deficit
e		None of the above
In the patient above, which of the following locations would correlate with her language deficit?		
a		Right posterior temporal lobe
b		Left amygdala
c	*	Left supramarginal gyrus
d		Right posterior frontal lobe
e		None of the above
In the patient in question 43, which of the following signs would also help confirm the diagnosis?		
a		Acalculia
b		Contralateral superior quadrantanopsia
c		Contralateral limb apraxia
d		A and C
e	*	B and C
A patient presents with global aphasia. Which of the following is spared in this setting?		

a		Spontaneous speech
b		Naming
c		Repetition
d		Reading
e	*	None of the above
An 80-year-old male with a history of diabetes presents with global aphasia. The rest of his examination is normal. There are no signs of hemiparesis. Which of the following could explain this finding?		
a		Cerebellar lesion
b	*	Thalamic lesion
c		Caudate lesion
d		Pontine lesion
e		None of the above
A 63-year-old female with atrial fibrillation presents with a stroke. Magnetic resonance imaging demonstrates a lesion in both superior temporal gyri. Which of the following would be associated with this?		
a		Wernicke's aphasia
b		Broca's aphasia
c	*	Pure word deafness
d		Conduction aphasia
e		None of the above
Which of the following differentiates auditory nonverbal agnosia from pure word deafness?		
a	*	Auditory nonverbal agnosia involves failure to recognize familiar sounds
b		Pure word deafness has language deficits
c		Pure word deafness has no sparing of pure-tone hearing
d		Auditory nonverbal agnosia involves both language and nonlinguistic sounds
e		None of the above
Which of the following is associated with transcortical motor aphasia?		
a		Repetition is impaired
b	*	Mutism may be present initially
c		Initiation of speech is intact
d		There is no difference between transcortical motor aphasia and Broca's aphasia
e		None of the above
A 78-year-old male presents with an acute stroke. Which of the following locations would explain why the patient has lost the ability to perform skilled movements but has full motor strength?		
a		Supplementary motor cortex
b		Left inferior parietal lobe
c		Corpus callosum
d	*	All of the above
e		None of the above
A 55-year-old female presents with ideomotor apraxia on examination. Which of the following would be an example of a bedside test for this problem?		
a		Tandem walk
b	*	Showing how to hammer a nail into the wall
c		Asking to repeat three words
d		Asking the patient for different ideas about her symptoms
e		None of the above
A 45-year-old male presents to the emergency department (ED). On examination, he is found to have difficulty performing tasks with his mouth. He cannot demonstrate how to blow out a candle or how to kiss.Which of the following could cause this?		
a	*	Lesion in the left inferior frontal region
b		Chronic alcohol use
c		History of gastric bypass surgery
d		Hypoglycemia

e		None of the above
Which of the following is part of Gerstmann's syndrome?		
a		Confusion of handedness
b		Alexia with agraphia
c		Inability to count numbers
d	*	All of the above
e		None of the above
An 89-year-old male presents with progressive difficulty with ADLs. His memory is intact, however, he demonstrates unilateral apraxia. Which of the following is possible?		
a		Vertebral dissection
b	*	Corticobasal degeneration
c		Reye's syndrome
d		Anton's syndrome
e		None of the above
Dementia with Lewy bodies accounts for what percentage of dementias?		
a	*	15%
b		1%
c		50%
d		99%
e		None of the above
Which of the following helps differentiate AD from dementia with Lewy bodies?		
a		Patients with AD have visual hallucinations
b	*	Patients who have dementia with Lewy body have Parkinsonian features
c		Patients with AD have intact rapid eye movement behavior disorder
d		Patients with AD have more visuospatial impairment
e		None of the above
A 65-year-old male presents with progressive dementia. While in the examination room, he goes from being alert, coherent, and oriented to a period of confusion and becomes unresponsive to questions but wide awake and then back. Which of the following is consistent with the patient's symptoms?		
a	*	Dementia with Lewy bodies
b		AD
c		Parkinson's dementia
d		Frontotemporal dementia
e		Vascular dementia
Which of the following statements regarding dementia with Lewy bodies is true?		
a		Myoclonus never occurs
b	*	Resting tremor occurs less frequently than in Parkinson's disease
c		Gait is rarely an issue
d		The etiology of this dementia is known
e		None of the above
An 80-year-old female with severe dementia, hallucinations, and Parkinson's features is found to be very agitated, and her hallucinations are becoming worse. Which of the following would be the next best step?		
a		Initiate antipsychotics
b		Initiate a psychiatry consult
c	*	Initiate acetylcholinesterase inhibitors
d		Administer neuropsychological testing
e		None of the above
A 78-year-old male who has dementia with Lewy bodies has severe agitation while being hospitalized. Donepezil was ineffective. Which of the following medications would be the treatment of choice?		
a	*	Quetiapine
b		Haloperidol
c		Metoclopramide

d		Lorazepam
e		None of the above
Which of the following may be the cause of depression in patients who have dementia with Lewy bodies?		
a		Damage to the locus ceruleus
b		Axonal degeneration of the vagus nerve
c		Psychological response to their impairment
d		Depression is rarely seen in this type of dementia
e	*	A and C
A 56-year-old male with a history of motor neuron disease presents with a gradual change in his personality per his wife. He was recently at a social gathering and suddenly became very disinhibited and took off all his clothes and started making inappropriate jokes. Which of the following is consistent?		
a		The patient is acutely psychotic and should be evaluated by a psychiatrist
b	*	This behavior is due to pyramidal cell loss in the frontal and temporal lobes
c		This behavior is due to Lewy bodies in the basal ganglia
d		This behavior is the patient's normal personality
e		None of the above
Which of the following tests is an adequate bedside test for frontal lobe dysfunction?		
a		Montreal Cognitive Assessment
b		Mini-Mental State Examination
c		Antisaccade task
d	*	A and C
e		B and C
A 56-year-old male with a history of traumatic brain injury presents to the clinic. He is found to have abnormal digit span forward and backward testing. Which of the following would meet criteria for abnormal digit span?		
a		4/4
b		7/2
c	*	5/3
d		6/1
e		None of the above
A 78-year-old male with a long-standing history of dementia has had urinary incontinence. Which of the following areas could be the cause of the incontinence?		
a	*	Posterior superior frontal gyri
b		Amygdala
c		Left posterior temporal lobe
d		Lateral medullary lesion
e		None of the above
A 59-year-old male with a history of atrial fibrillation presents with an acute stroke. He is found to have abulia as well as some personality changes. There is a period of time that he is agitated and confused, but then he progresses to abulia. Which of the following is correct?		
a		This is psychogenic and not organic
b	*	Occlusion of the artery of Heubner
c		Bilateral parietal lobe infarcts
d		Hypertensive bleed in the left thalamus
e		None of the above
A 45-year-old male presents with a gradual decline of cognitive function. He is found to have anosmia, loss of inhibition, memory difficulty, and occasional visual changes. Which of the following could explain his symptoms?		
a		Basilar migraine
b	*	Olfactory groove meningioma
c		Early-onset AD
d		Frontotemporal dementia
e		None of the above

Which of the following are frontal release signs?		
a		Glabellar
b		Snout
c		Grasp
d		Palmomental
e	*	All of the above
A 61-year-old male with progressive problems presents to the neurologist.He is found to have normal pressure hydrocephalus. Which of the following is not part of the classic syndrome of normal pressure hydrocephalus?		
a		Incontinence
b		Dementia
c		Gait apraxia
d	*	Headache
e		All of the above are part of normal pressure hydrocephalus
An 80-year-old male is found to have communicating hydrocephalus on computed tomography (CT) scan of his head. He has progressive difficulty with gait and memory. Which of the following is the most likely cause?		
a		Overproduction of CSF
b	*	History of intraventricular hemorrhage
c		Venous drainage insufficiency
d		Aqueductal stenosis
e		None of the above
A 55-year-old male presents with obstructive hydrocephalus. He is evaluated and treated by the neurosurgeon with a ventriculoperitoneal shunt. Which of the following represents the amount of CSF he produces in 1 hour?		
a		10 mL
b		1 mL
c	*	20 mL
d		100 mL
e		None of the above
A 40-year-old male with a recent diagnosis of minimal cognitive impairment is in your clinic. He is worried that he may develop AD. Which one of the following choices represents his annual risk of developing AD?		
a		1% per year
b	*	15% per year
c		50% per year
d		90% per year
e		None of the above
A 32-year-old female who has a history of migraines with aura presents to the ED with left-sided weakness and facial droop. She is found to have had an acute stroke with multiple areas of gliosis in the subcortical white matter predominately in the frontal lobe as well as in the basal ganglia. She is noted to have some mild dementia. Which of the following would help confirm her diagnosis?		
a		Homocysteine levels
b		Thyroid status
c	*	Notch3 gene mutation
d		CT angiogram
e		None of the above
A 45-year-old male presents with a history of chronic renal failure for 20 years. He has been on dialysis for that period of time. On examination, he is found to have dysarthria, myoclonus, dementia, and some apraxia. Which of the following is the cause of the encephalopathy?		
a		Medication
b		Elevated ammonia levels
c	*	Aluminum toxicity
d		Increased protein 14-3-3
e		None of the above
A 5-year-old boy presents to the clinic with a history of epilepsy, cognitive regression, and progressive		

blindness. A skin biopsy is done and demonstrates intracellular accumulation that is yellow-green in color and is fluorescent. How did the boy get this disease?		
a		It is X-linked
b		It is autosomal dominant
c	*	It is autosomal recessive
d		He has Trisomy 21
e		None of the above
A 9-year-old boy presents to the clinic with a history of staring spells about 20 times per day over the past 2 months. There is no family history of seizure. An electroencephalography is performed and demonstrates a 3-Hz spike and wave during hyperventilation. Which of the following is the best next step?		
a		Order a magnetic resonance imaging brain scan
b		Initiate phenytoin
c	*	Initiate ethosuximide
d		Report the family to social services
e		There is nothing to do
A 4-year-old girl presents with ataxia and skin lesions. She is diagnosed with ataxia-telangiectasia. What should the parents look out for?		
a		Leukemia
b		Renal cell carcinoma
c	*	Death before age 20
d		Pontine atrophy
e		None of the above
A mother brings her 1-week-old daughter to your clinic and states her daughter's face is "crooked." As you evaluate the infant, you do not see any abnormalities, but she then starts crying and develops a right-sided facial droop. What is the best next step?		
a		Lumbar puncture
b		Vitamin B12
c	*	Echocardiogram
d		Bone scan
e		None of the above
Patients with craniofacial syndrome have an abnormality on what chromosome?		
a		1
b		12
c		16
d	*	22
e		2
Which of the following is not a cardinal feature of neuronal ceroid lipofuscinosis?		
a		Motor regression
b		Progressive blindness
c		Epilepsy
d	*	Ataxia
e		None of the above
A 12-year-old boy is found to have a Chiari malformation type II.Which of the following does he also have?		
a		Arachnoid cyst
b		Intracranial hypotension
c	*	Lumbar meningomyelocele
d		Hypoplastic cerebellum
e		All of the above
During gestation, at what week does gyri formation occur?		
a		6
b	*	14
c		24

d		36
e		None of the above
A father brings his son in for a check-up. The child is able to wave hello, plays peekaboo, and can crawl and sit without support. He has been developing appropriately. What age must he at least be?		
a		8 weeks
b	*	8 months
c		12 months
d		24 months
e		None of the above
A term infant is found hypotonic and moderately weak at birth. Her mother has a history of myasthenia gravis. What percentage of infants born to mothers with myasthenia gravis will develop neonatal myasthenia?		
a		1%
b	*	15%
c		50%
d		99%
e		None of the above
In the infant in the previous question, what is the next best step?		
a		Administer treatment with oral medication
b	*	Supportive care
c		Plasma exchange
d		Intravenous steroids
e		None of the above
A neonate presents with a seizure. On lab testing, he is found to have low blood glucose. Which of the following would not be the cause of the lab abnormality?		
a		Glycogen storage disease
b		Fructose 1,6 diphosphatase deficiency
c		Maple syrup urine disease
d	*	Citrullinemia
e		None of the above
A neonate is born comatose and with lower cranial nerve damage. The most likely etiology is neonatal asphyxia. Which of the following would help support this diagnosis?		
a	*	Enterocolitis
b		Normal hepatic enzymes
c		No evidence of irregular rhythm
d		Usually no meconium is passed
e		None of the above
Which of the following are causes of persistent hypoglycemia in a neonate?		
a		Maternal diabetes
b		Prematurity
c		Asphyxia
d	*	Aminoaciduria
e		Intrauterine malnutrition
A 1-month-old infant is found to have hypocalcemia. On further examination, she is found to have facial abnormality and absent or low T cells. Which of the following chromosomes are linked with her abnormality?		
a		1
b		12
c		19
d	*	22
e		None of the above
Which one of the following statements about primitive reflexes is true?		
a		Hand grasp reflex is present around 3 months and usually disappears around 4 months of age
b	*	Hand grasp reflex typically appears by 34 weeks and disappears around 6 months of age

c		The Moro reflex appears around 9 months and usually persists
d		The parachute reflex appears around 9 months of age and disappears by age 2 years
e		None of the above
A 6-year-old child presents with staring spells. She is diagnosed with absence seizures. Which of the following could be used as monotherapy?		
a		Tiagabine
b		Gabapentin
c	*	Lamotrigine
d		Dilantin
e		None of the above
A 3-year-old boy presents with worsening irritability, weight loss, and fever. There is a palpable abdominal mass on examination. Imaging shows a large mass arising from the adrenal gland. Which of the following paraneoplastic disorders is most classically associated with this type of tumor?		
a		Myasthenia gravis
b		Stiff-person syndrome
c		Myotonic dystrophy
d	*	Myoclonic encephalopathy of infants
e		None of the above
What is the most common type of focal epilepsy in children?		
a		West syndrome
b		Landau-Kleffner syndrome
c	*	Benign epilepsy with centrotemporal spikes (BECTS)
d		Benign occipital epilepsy
e		None of the above
A 13-year-old female presents with a history of choreoathetosis, dysarthric speech, grimacing, and awkward gait, which have been slowly progressing since early childhood. She has telangiectasias on her eye examination. Which of the following chromosomes is associated with this disorder?		
a	*	11
b		20
c		4
d		9
e		None of the above
Which of the following is often associated with Landau-Kleffner syndrome?		
a		Absence seizures
b		Rheumatoid arthritis
c	*	Electrical status epilepticus of sleep
d		It is most often associated with an underlying tumor
e		None of the above
A 9-year-old boy presents with episodes of dystonia. He is diagnosed with dopamine-responsive dystonia. Which of the following is true?		
a		It occurs more often in boys than girls
b	*	It has a circadian pattern
c		The patient has no signs of gait abnormalities
d		It has no association with focal dystonias
e		None of the above
Which of the following is not part of the triad that comprises the clinical elements of Lesch-Nyhan syndrome?		
a	*	Uremia
b		Neurologic impairment
c		Uricemia
d		Behavioral problems
e		None of the above
A 5-year-old boy with swallowing difficulties is found to have a medulloblastoma. Which of the following is		

true?		
a		This is a type of glioma
b	*	It is primarily found in the posterior fossa
c		It is typically a hereditary disorder
d		Hydrocephalus rarely complicates the situation
e		None of the above
A 14-year-old female is diagnosed with neurofibromatosis type 1 (NF1). Which of the following is associated with NF1?		
a		Optic nerve glioma
b		Inguinal freckles
c		Café-au-lait spots
d		Pseudoarthrosis
e	*	All of the above
A 15-year-old boy presents to the office with complaints of frequent twitching of his right eye. He is diagnosed with motor tics. Which of the following is true?		
a		Symptom onset should be younger than age 18
b	*	Females are more often affected than males
c		The symptoms usually resolve by the third decade
d		Tics are not suppressible
e		None of the above
Which of the following is a core feature of pervasive developmental disorder?		
a		Impaired social skills
b		Impaired verbal communication
c		Impaired nonverbal communication
d		Perseveration
e	*	All of the above
A very small newborn is found to have a periventricular-intraventricular hemorrhage, which was noted to be located at the germinal plate with some ventricular involvement. What grade would the hemorrhage be classified as?		
a		I
b	*	II
c		III
d		IV
e		V
Which of the following is/are possible causes for hypoxic-ischemic encephalopathy at birth?		
a		Placental abruption
b		Uterine rupture
c		Umbilical cord infarction
d		A and C
e	*	All of the above
What is the predominant bacterial infection associated with neonatal meningitis?		
a		Group A streptococcus
b		Herpes simplex virus
c		Mycoplasma
d	*	Group B streptococcus
e		N. meningitis
What is the mortality rate associated with neonatal seizures?		
a		5%
b	*	20%
c		50%
d		80%
e		None of the above

A patient is found to be in a coma, and an electroencephalogram (EEG) is performed. Which of the following on the EEG would support the finding that this patient was in hepatic encephalopathy?		
a		POST
b		Alpha rhythm
c	*	Triphasic waves (TWs)
d		3-Hz spike and wave
e		None of the above
Which of the following would be consistent with a brain tumor located in the left parietal lobe?		
a		Spike and wave discharges on the right hemisphere
b	*	Delta wave in the left hemisphere
c		POST
d		Posterior dominant rhythm of 9 Hz
e		None of the above
A 32-year-old female is diagnosed with optic neuritis. A visual evoked potential is tested. Which of the following is true?		
a		Retrochiasmatic lesions would be best detected with this test
b	*	Prolonged P-100 would be consistent with the diagnosis
c		Temporal axons of the optic nerve cross anterior to the optic chiasm
d		Carbamazepine usually shortens the latency of this test
e		None of the above
A 67-year-old male with early-onset dementia on no medication has an EEG. Which of the following would most likely be seen?		
a	*	Alpha frequency of 8 Hz
b		Occasional temporal sharp waves
c		No reactivity
d		TWs
e		None of the above
A 56-year-old male with an episode of confusion is found to have transient global amnesia. Which of the following would be consistent with this diagnosis on EEG?		
a	*	Normal
b		Slow background rhythm
c		4-Hz spike and wave with photic stimulation
d		Occasional occipital sharps
e		None of the above
Which of the following diseases may be consistent with TWs?		
a		Multi-infarct dementia
b	*	Creutzfeldt-Jakob disease
c		Parkinson’s disease
d		Progressive supranuclear palsy
e		None of the above
Which of the following would be seen in a patient in stage I sleep (drowsy)?		
a		Sleep spindles
b		Rapid eye movements
c	*	Slow roving eye movements
d		Periodic leg movements
e		None of the above
Which of the following are considered to be idiopathic generalized epilepsies?		
a		West syndrome
b	*	Juvenile myoclonic epilepsy
c		Autosomal dominant frontal lobe epilepsy
d		Lennox-Gastaut syndrome
e		None of the above

Which of the following are not considered EEG artifacts?		
a		Eye movements
b		Glossokinetic
c		Sweat
d		Respiration
e	*	All of the above
A 45-year-old male with acute head trauma is encephalopathic. An EEG is performed and shows some amplitude asymmetry from one side to the other. Which of the following is a likely etiology?		
a		Electrode malfunction
b	*	Underlying hematoma
c		History of seizures
d		Mesial temporal sclerosis
e		None of the above
A 56-year-old male with a recent stroke is undergoing transcranial magnetic stimulation in a research study to see if he can regain function. Which of the following would not be a contraindication?		
a		Pacemaker
b		Recent head trauma
c		History of epilepsy
d		Metallic foreign body
e	*	None of the above; they all are contraindications
A 32-year-old female with a recent history of optic neuritis undergoes visual evoked potentials. Which of the following statements is true regarding the visual evoked potentials?		
a		Amplitude will be decreased
b	*	Prolongation of the P-100
c		Amplitude will be increased
d		Shortened P-100
e		None of the above
A 23-year-old male presents after severe head trauma due to a motor vehicle accident. He is found to be comatose, and an EEG is performed. Which of the following would favor a better prognosis?		
a		Widespread continuous spindles
b		Minimal reactivity
c	*	Spindle coma with reactivity
d		Excessive alpha with no reactivity
e		None of the above
Which of the following is the most common artifact seen on EEG?		
a	*	Muscle
b		Sharp waves
c		Alpha rhythm
d		Sweat
e		Photic
Which of the following is often seen during rapid eye movement (REM) sleep?		
a		K-complex
b		Spindles
c		POSTs
d	*	Sawtooth waves
e		None of the above
Which of the following frequencies would be consistent with spindle activity on EEG?		
a		4 Hz
b	*	14 Hz
c		20 Hz
d		50 Hz
e		None of the above

Which of the following aspects of stage II sleep is true?		
a		Rapid eye movements are seen.
b		Lowest electromyography (EMG) tone
c		Vertex sharp waves are required for this stage
d	*	Loud noises can cause K-complex
e		None of the above
A 12-year-old boy is found to be sleep walking and sleep talking regularly. His last sleep-walking episode led him to leave the house, but he did not injure himself. Which of the following is true?		
a	*	This occurred out of slow-wave sleep
b		This sounds like REM behavior disorder
c		Nightmares are the usual cause of sleep walking
d		The boy must be awake and should seek psychological evaluation
e		None of the above
A 56-year-old male is comatose after cardiac arrest. An EEG is performed using strict guidelines, and he is deemed to have electrocerebral inactivity. The intensive care team has told the family that he is brain dead. Which of the following statements is true?		
a		His core body temperature must be less than 32°C
b		He must be on sedation for his comfort
c		The patient must have passed the apnea test
d	*	He has no brain activity greater than 2 uV
e		None of the above
Which of the following are somatosensory evoked potentials (SSEPs) used in neurological patients?		
a	*	Prognosis in comatose patients
b		Evaluation for epileptic activity
c		Evaluating corticospinal tract abnormalities
d		Spinal cord abnormalities are not evaluated using this modality
e		None of the above
The N20 is a critical value in the testing of SSEPs. In a patient with anoxic brain injury who has absent N20s bilaterally, which of the following would be true?		
a	*	This is a poor prognosis
b		All patients with absent N20s always have bad outcomes
c		EEG is more sensitive in abnormalities in the spinal cord
d		A and B
e		None of the above
Which of the following are determinants of mortality and morbidity in status epilepticus?		
a		Etiology
b		Family history
c		Age
d	*	A and C
e		None of the above
In which of the following would a brain stem auditory evoked response be useful?		
a		Left parietal stroke
b	*	Demyelinating disease
c		Acoustic neuroma
d		B and C
e		All of the above
In a patient with AIDS dementia, which of the following is true?		
a		Magnetic resonance imaging (MRI) readings of the brain are usually normal
b		EEG abnormalities precede memory difficulties
c	*	Computed tomography (CT) scan of the head usually shows atrophy
d		Antiretroviral medications have no improvement in AIDS dementia
e		All of the above

What percentage of patients with focal slowing on EEG will have an abnormal MRI or CT scan of the head?		
a		1%
b		10%
c		33%
d	*	70%
e		100%
REM sleep seen during a routine daytime EEG can be due to which of the following?		
a		Narcolepsy
b		Sleep deprivation
c		ETOH withdrawal
d		Withdrawal from a selective serotonin reuptake inhibitor (SSRI)
e	*	All of the above
Which of the following are features on an EEG of a patient with rolandic epilepsy?		
a		Focal spikes in the parietal region
b	*	Focal central-midtemporal sharp waves
c		Slow background rhythm
d		Focal intermittent delta
e		None of the above
Which of the following is true of juvenile myoclonic epilepsy?		
a	*	Lifetime AED usage
b		3-Hz spike and wave with hyperventilation on EEG
c		Photic stimulation has no effect on these patients
d		Responds well to ethosuximide
e		None of the above
What percentage of patients with herpes encephalitis have focal EEG changes?		
a		10%
b		20%
c		50%
d	*	80%
e		99%
Which of the following represents brachial plexus integrity during a somatosensory evoked potential?		
a		N13 wave
b	*	Erb point potential
c		P14
d		N18
e		N20
Which of the following waves is delayed on visual evoked potential in patients with optic neuritis?		
a		N20
b	*	P-100
c		Wave I
d		Wave I to III interpeak
e		None of the above
Which of the following is part of the principles of evoked potential recording?		
a		A large electrical signal is recorded at the cortex
b	*	A small electrical signal is recorded at the scalp
c		A small stimulus is given in the spinal cord
d		Delayed responses arise from axonal damage
e		None of the above
Which of the following lowers the seizure threshold?		
a		Carbamazepine
b		Lamotrigine
c		Phenytoin

d	*	Wellbutrin
e		None of the above
Which one of the following is an irreversible reaction or very slowly reversible reaction of antipsychotic medications?		
a		Resting tremor
b		Dystonia
c	*	Tardive dyskinesia
d		Sedation
e		None of the above
If comparing tricyclic antidepressants to selective serotonin reuptake inhibitors (SSRIs), which of the following statements is true?		
a		Patients on SSRIs usually have dry mouth
b		Tricyclic antidepressants have dopaminergic effects
c		SSRIs elevate norepinephrine levels
d	*	Tricyclic antidepressants cause sedation
e		None of the above
What is the pathway that is involved with Parkinson's disease side effects of antidopaminergic agents?		
a		Spinothalamic
b		Mesocortical
c		Mesolimbic
d	*	Nigral striatal pathway
e		None of the above
Which of the following inhibits prolactin?		
a		Adrenocorticotropic hormone (ACTH)
b		Corticotropin-releasing hormone (CRH)
c		Thyrotropin-releasing hormone (TRH)
d	*	Dopamine
e		Orexin
A 24-year-old male with a history of seizures presents in status epilepticus. Which of the following agents would be considered first-line therapy?		
a		Valproate
b	*	Lorazepam
c		Clonazepam
d		Ethosuximide
e		None of the above
Which of the following antiepileptic drugs has similar properties as tricyclic antidepressants?		
a		Topiramate
b		Lamotrigine
c	*	Carbamazepine
d		Clonazepam
e		None of the above
A 13-year-old boy with a history of seizure disorders presents with aplastic anemia. Which one of the following medications could he be on?		
a		Lamotrigine
b		Diazepam
c	*	Felbamate
d		Gabapentin
e		None of the above
An 87-year-old male with a history of Parkinson's disease has been on dopamine agents for the past year. Which one of the following has more peripheral effects than central effects?		
a		Bromocriptine
b		Pergolide

c	*	Carbidopa
d		Trihexyphenidyl
e		Levodopa
Which of the following has antiemetic effects via serotonin receptor blockade?		
a		Prochlorperazine
b		Promethazine
c		Metoclopramide
d		Scopolamine
e	*	Ondansetron
Which of the following agents has the least amount of sedation as a side effect?		
a		Doxepin
b		Amitriptyline
c	*	Protriptyline
d		Amoxapine
e		Clomipramine
A 56-year-old male with early-onset Parkinson's disease is evaluated and placed on medication. Which one of the following irreversibly inhibits monoamine oxidase type B?		
a		Phenelzine
b		Paroxetine
c		Maprotiline
d		Bupropion
e	*	Selegiline
A 45-year-old male with a history of severe depression is started on phenelzine. Which one of the following would not be recommended?		
a	*	Sertraline
b		Isocarboxazid
c		Alprazolam
d		Bupropion
e		Gabapentin
A 34-year-old female with a seizure disorder is started on valproic acid. Which one of the following also has a similar mechanism that results in inducing its own metabolism?		
a		Gabapentin
b		Ethosuximide
c		Phenytoin
d	*	Lamotrigine
e		None of the above
A 45-year-old male with a long-standing history of generalized seizures is noncompliant with his medications. Which one of the following agents has the longest half-life?		
a		Primidone
b	*	Phenobarbital
c		Gabapentin
d		Gabapentin
e		Phenytoin
A 40-year-old male with a history of migraines uses sumatriptan when he has a migraine. Which one of the following receptors is where the medication works?		
a		D3
b		Muscarinic acetylcholine
c		Inhibits the reuptake of gamma-aminobutyric acid (GABA)
d	*	5HT1
e		Mu receptors in the spinal cord
5-HT imbalance has not been associated with which one of the following conditions?		
a		Depression

b	*	Narcolepsy
c		Attention deficit disorder
d		Headaches
e		All of the abovek
A 22-year-old male presents with a long-standing history of seizures. He is given diazepam for a recent seizure. Which of the following is a true statement?		
a	*	GABA receptors regulate the Cl- ion channel
b		Diazepam has not been shown to be effective in the treatment of seizures
c		Diazepam also binds to dopamine receptors
d		GABA receptors are on a 16-subunit complex
e		None of the above
Which of the following agents are considered opiate receptor agonists or associated with opiates?		
a		Endorphins
b		Dynorphins
c		Enkephalins
d		Pro-opiomelanocortin
e	*	All of the above
Which one of the following is associated with glutamate?		
a		Trihexyphenidyl
b		Pergolide
c	*	Riluzole
d		Pimozide
e		None of the above
Which one of the following tricyclic antidepressants has the longest half-life?		
a		Imipramine
b		Phenelzine
c	*	Protriptyline
d		Maprotiline
e		None of the above
A 38-year-old female with a history of schizophrenia presents in a coma, with a fever and rigidity. She is diagnosed with neuroleptic malignant syndrome. Which one of the following agents could have caused this?		
a	*	Chlorpromazine
b		Theophylline
c		Theobromine
d		Pemoline
e		None of the above
Which one of the following agent’s elimination is enhanced by smoking?		
a		Methylphenidate
b	*	Caffeine
c		Maprotiline
d		Fluvoxamine
e		None of the above
A 21-year-old male presents with an amphetamine overdose. Which one of the following would be recommended in the treatment of the overdose?		
a		Acidifying the urine
b		Chlorpromazine
c		Clonidine
d		Guanfacine
e	*	All of the above
An 84-year-old male with Parkinson’s disease presents to the clinic. Which one of the following could be used as an adjunct to his L-dopa?		
a		Trihexyphenidyl

b		Benztropine
c		Procyclidine
d		Biperiden
e	*	All of the above
A 40-year-old male presents with alcohol withdrawal. Which one of the following agents has the longest half-life?		
a		Midazolam
b		Temazepam
c	*	Chlordiazepoxide
d		Alprazolam
e		None of the above
A 42-year-old male presents to his neurologist complaining of right arm weakness that has progressed over the past 2 years. He states he occasionally feels some tingling in that same arm. The examination shows atrophy and fasciculations of his arm and weakness. His reflexes are normal, and his sensory examination is normal. What would be the findings on his electrodiagnostic studies, and what would be the treatment of choice?		
a		Decrease amplitude of the sensory nerve action potential amplitudes (SNAPs); intravenous immunoglobulin (IVIG)
b		Conduction block; methylprednisolone
c	*	Fifty percent reduction in compound muscle action potential (CMAP) amplitude and area; IVIG
d		Normal sensory studies; cyclophosphamide
e		Absent H-reflex; steroids
What antibody is found in myasthenia gravis patients with negative AchR antibodies?		
a		Anti-GAD antibody
b	*	MuSK antibody
c		Anti-Hu antibody
d		Anti-GQ1b antibody
e		None of the above
A 24-year-old male diagnosed with HIV was found to have increased myalgia in the proximal leg regions bilaterally. He has been taking antiretrovirals for 2 years. A muscle biopsy was performed, and ragged red fibers were seen. It was recommended that the patient discontinue one of his antiretrovirals. What else may be suggested to help improve the proximal leg weakness?		
a		Visit a physical therapist to improve his strength in the lower extremities
b		Stopping the antiretroviral medication will make no difference and should be restarted
c	*	Adding corticosteroids has been shown to improve the weakness in some patients
d		Nothing else can be done, and there has been evidence that his disease process will accelerate
e		None of the above
All of these neuromuscular disorders are often preceded by gastrointestinal (GI) symptoms EXCEPT:		
a		Intermittent porphyria
b		Botulinism
c		Lead poisoning
d		Arsenic intoxication
e	*	Rabies
Duplication of the PMP22 gene on chromosome 17p11 results in:		
a		Hereditary sensory and autonomic neuropathy (HSAN) type V
b	*	Hereditary neuropathy with liability to pressure palsies (HNPP)
c		Charcot-Marie-Tooth disease type 1A (CMT 1A)
d		Charcot-Marie-Tooth disease type 1B (CMT 1B)
e		None of the above
Which of the following toxins causes hair loss, arthralgias, GI symptoms, and an axonal sensorimotor neuropathy (predominately sensory)?		
a		Mercury
b		Lead

c	*	Thallium
d		Ethylene glycol
e		None of the above
All of these are typical of amyloid neuropathy, EXCEPT:		
a		Autosomal dominant inheritance
b	*	Occurs frequently below the age of 40
c		Motor findings are usually minimal
d		Course is slow and steady
e		Forty percent of patients have M-protein in their serum protein electrophoresis (SPEP)
The mechanism of action of nitric oxide damage to the spinal cord is:		
a		Calcium channel blockade
b		Direct toxicity to the spinothalamic tracts
c		Prolonged opening of sodium channels
d	*	Cobalamin inactivation
e		None of the above
All of the following are related to CMT type IV, EXCEPT:		
a	*	Autosomal dominant inheritance
b		Accumulation of phytanic acid
c		Retinitis pigmentosa
d		High consanguinity rate
e		None of the above
Which of the following are inherited forms of autonomic neuropathy?		
a		Amyloidosis
b	*	Shy-Drager syndrome
c		Chagas' disease
d		Bassen-Kornzweig syndrome
e		Diabetes
A 45-year-old male presents with complaints in his fourth and fifth digit on his right hand having numbness and tingling. He has also noticed his fifth digit gets caught in his pants when he tries to put his hand in his pant pocket. Which of the following is the possible site of pathology for this patient?		
a	*	Medial epicondyle area
b		Carpal tunnel
c		Femoral groove
d		C1 root
e		None of the above
The lateral cutaneous femoral nerve has motor function of which of the following muscles?		
a		Serratus anterior
b		Adductor magnus
c		Sartorius
d		Rectus femoris
e	*	None of the above
A 23-year-old male with a recent history of an upper respiratory illness presents with progressive weakness. He is diagnosed with Guillain-Barré syndrome. Which of the following supports the diagnosis?		
a		Areflexia
b		Progressive weakness
c		Relative symmetry
d		Absence of fever
e	*	All of the above
A 56-year-old male presents with distal weakness, tongue fasciculations, and atrophy in two limbs. He is diagnosed with amyotrophic lateral sclerosis (ALS). What is the percentage of ALS that is familial in nature?		
a		1%
b	*	10%

c		75%
d		90%
e		None of the above
Which of the following is the most common heredity neuropathy?		
a	*	Hereditary motor sensory neuropathy type 1
b		Guillain-Barré syndrome
c		Lambert-Eaton myasthenic syndrome (LEMS)
d		Postural tachycardia syndrome (POTS) disease
e		Diabetes
A 35-year-old female with muscle cramps and weakness is found to have polymyositis. Which of the following muscles will not be involved?		
a		Cardiac muscle
b		Distal hand muscles
c		Proximal leg muscles
d	*	Ocular muscles
e		None of the above
A 60-year-old male with numbness and tingling in his feet presents to your clinic. He has had diabetes for 10 years. Which of the following is the most common manifestation of diabetic neuropathy?		
a		Small fiber neuropathy
b	*	Distal symmetric polyneuropathy
c		Diabetic autonomic neuropathy
d		Diabetic neuropathic cachexia
e		None of the above
A 20-year-old female presents with acute weakness and is found to be in tetany with carpopedal spasm. Which one of the following could be a cause of her symptoms?		
a		Hyperthyroidism
b		Hypopituitarism
c		Hyperparathyroidism
d	*	Hypoparathyroidism
e		Polymyalgia rheumatica
A 30-year-old female presents with onset of hemifacial spasms. There is no family history, and her symptoms have progressively worsened. Which one of the following is true?		
a		This is most commonly idiopathic, and nothing further needs to be done
b	*	It is unusual at her age and may be a sign of multiple sclerosis
c		Hemimasticatory spasm is not analogous to hemifacial spasms
d		Fatigue or reading usually improves the symptoms
e		All of the above are true
Which of the following is not true or associated with inclusion body myositis (IBM)?		
a		Proximal and distal muscles are often involved
b		Cardiac disease is common
c		Dysphagia is common
d	*	The disease is typically symmetrical
e		None of the above is associated with IBM
Kennedy’s disease is associated with which of the following?		
a	*	Lower motor neurons
b		Upper motor neurons
c		Eye musculature
d		Sporadic
e		A and B
A 65-year-old male with a long history of smoking presents with weakness. An electromyography/nerve conduction study (EMG/NCS) is performed, and the patient is found to have LEMS. Which one of the following is associated with LEMS?		

a		Anti-Hu antibody
b	*	Voltage-gated calcium channel antibody
c		Anti-Jo
d		Campylobacter jejuni infection
e		Anti-GQ1B antibody
A 21-year-old female with myasthenia gravis is on immunosuppressant agents. Which one of the following would place her in class V rating?		
a		Oropharyngeal muscle involvement
b		Limb or axial muscle involvement
c	*	Intubation
d		Feeding tube
e		None of the above
A 15-year-old male with periodic paralysis would have which one of the following channel defects?		
a		Sodium
b		Calcium
c		Potassium
d		A and C
e	*	All of the above
A patient presents with increasing muscle rigidity and stiffness. She is found to have stiff syndrome. Which of the following is an associated antibody with this disorder?		
a		Anti-GQ1b antibody
b	*	Anti-GAD antibody
c		Anti-Hu antibody
d		HLA-DQB106
e		None of the above
A 25-year-old female presents to the clinic with neck stiffness, fever, and headache. She is found to have aseptic meningitis. Which one of the following is most likely the cause?		
a		Lyme disease
b		Sarcoidosis
c	*	Coxsackievirus
d		Adenovirus
e		None of the above
A 45-year-old female with a history of AIDS develops encephalopathy. Which one of the following is the most common cause for encephalopathy in AIDS patients?		
a	*	Toxoplasmosis
b		Herpes
c		Medication side effects
d		Staphylococcus aureus
e		None of the above
A 29-year-old male with a history of AIDS is diagnosed with progressive multifocal leukoencephalopathy (PML). Which of the following is true?		
a		PML damages white matter of the brain including U-fibers
b		PML is diagnosed only by brain biopsy
c	*	Polymerase chain reaction (PCR) for the John Cunningham (JC) virus shows high specificity
d		Highly active antiretroviral therapy (HAART) has not shown benefit for AIDS patients
e		None of the above
A 45-year-old male who recently traveled to South Korea is found to have a headache, encephalopathy, and an acute infection with brucellosis. Which of the following is another possible neurologic complication?		
a		Bell’s palsy
b		Trigeminal neuralgia
c		Exophthalmos
d	*	Sensorineural hearing loss

e		None of the above
Which of the following is the most common virus associated with neonatal herpes encephalitis?		
a		Human herpesvirus-6 (HHV-6)
b		Herpes simplex virus-1 (HSV-1)
c		Human immunodeficiency virus (HIV)
d		Human T-cell lymphotropic virus (HTLV-1)
e	*	Herpes simplex virus-2 (HSV-2)
Patients treated for herpes encephalitis often have neurologic sequelae. Which one of the following is the most common sequelae?		
a		Hemiparesis
b		Developmental delay
c	*	Seizures
d		Stroke
e		Hematoma
Prior to effective immunizations, which one of the following was one of the most common causes of bacterial meningitis but is currently seen much less often and rarely occurs in children over age 5?		
a		Neisseria meningitidis
b		Streptococcus pneumoniae
c		Escherichia coli
d		Listeria monocytogenes
e	*	Haemophilus influenzae
A 34-year-old male complaining of muscle pain is found to have pyomyositis. What is the most likely location of his abscess?		
a		Psoas
b	*	Quadriceps
c		Biceps
d		Triceps
e		All of the above
Which one of the following is the most common neurologic manifestation of acute Lyme disease?		
a	*	Cranial neuropathy
b		Meningitis
c		Cerebritis
d		Radiculopathy
e		Radiculopathy
A 54-year-old male from Connecticut presents with a rash and history of tick bite. What percentage of patients with Lyme disease have erythema migrans at the site of the tick bite?		
a		5%
b		25%
c		50%
d	*	90%
e		None of the above
A patient presents with acute meningitis. She is found to have meningococcal meningitis. Which of the following is true?		
a		The patient is most likely 60 years old
b		Smoking does not increase the risk of disease
c	*	The patient must be in high school
d		Irritability is unlikely in the patient
e		None of the above
Which of the following is associated with Waterhouse-Friderichsen syndrome?		
a		Disseminated intravascular coagulation (DIC)
b		Large petechial hemorrhage
c		Fever

d		Septic shock
e	*	All of the above
A 34-year-old Hispanic male presents with new-onset seizures. He is found to have neurocysticercosis. Which of the following is the most likely etiology?		
a		HIV
b		HSV
c	*	Taenia solium
d		Coccidiomycosis
e		None of the above
Which of the following is the only reliable way of confirming the diagnosis of neurocysticercosis?		
a		Computed tomography (CT) scan of the head with and without contract
b		Magnetic resonance imaging (MRI) of the brain with and without gadolinium
c		Plain X-ray of the skull
d		Whole body bone scan
e	*	None of the above
A 45-year-old male presents with an acute stroke. He is found to have endocarditis. Which one of the following is the most likely organism?		
a		Enterococcus species
b	*	Streptococcus viridans
c		HSV type II
d		Pseudomonas
e		None of the above
Which of the following is the most common neurologic examination finding in neurosyphilis?		
a		Optic atrophy
b		Charcot's joint
c		Romberg's sign
d	*	Hyporeflexia
e		None of the above
A 56-year-old male with progressive dementia is found to have sporadic prion disease. What is the most likely cause, and what is the mean duration of mortality?		
a		Sporadic fatal insomnia; 6 months
b		Scrapie; 12 months
c	*	Sporadic Creutzfeldt-Jakob disease (CJD); 8 months
d		Familial fatal insomnia; 12 months
e		None of the above
A 34-year-old female presents with acute onset of vertigo, tinnitus, and facial paresis. She is diagnosed with Ramsay Hunt syndrome. Which of the following is associated with this disease?		
a		HIV
b		Coxsackie virus
c		Borrelia
d	*	HSV III
e		HSV III
A 55-year-old male with a history of IV drug abuse presents with fever, back pain, incontinence, and is found to have an epidural abscess. Which of the following is true regarding epidural abscess?		
a		Fever is present in 10% of cases
b	*	Fever is present in 33% of cases
c		Fever is present in 75% of cases
d		Fever is present in all cases.
e		None of the above
A 35-year-old male presents with bacterial meningitis. Which of the following tests has a prognostic value in bacterial meningitis?		
a		Cerebrospinal fluid (CSF) leukocyte count

b		Serum protein
c		CSF glucose
d	*	CSF lactate dehydrogenase
e		CSF protein
Which of the following is the most common cause of subdural empyema?		
a		Pulmonary spread
b		Trauma
c		Postsurgical
d	*	Paranasal sinusitis
e		None of the above
What often causes tropical ataxic neuropathy?		
a	*	Malnutrition
b		Virus
c		Trauma
d		Diabetes
e		Genetic disorder
Which of the following is the strongest risk factor for *Mycobacterium tuberculosis* to progress into active tuberculosis (TB)?		
a		Smoking
b	*	HIV coinfection
c		Hx of lymphoma
d		Chronic obstructive pulmonary disease (COPD)
e		None of the above
A 23-year-old male with sudden onset of fever, personality change, and confusion is found to have HSV encephalitis. What is the mortality rate of this disease if it is untreated?		
a		1%
b		20%
c	*	70%
d		100%
e		None of the above
Which of the following is part of the clinical triad associated with CNS Whipple's disease?		
a		Dementia
b		Vertical ophthalmoplegia
c		Myoclonus
d		A and C
e	*	All of the above
Which one of the following is associated with a trinucleotide repeat expansion?		
a		Tuberous sclerosis
b		McCardle's disease
c	*	Myotonic dystrophy
d		Sjögren's syndrome
e		Acute intermittent porphyria
You examine a child with weakness, wasting of the calf muscles, and diminished ankle reflexes. On nerve conduction study, you find severe slowing of the conduction velocity. Several of the patient's relatives have had similar symptoms, including the patient's father as well as three of her four siblings. This disease is most likely is associated with which chromosome?		
a		1
b		12
c		6
d	*	21
e		X linked
A variant of the apolipoprotein E (apoE) gene has been linked withincreased risk of Alzheimer's disease. On		

which chromosome is thisgene found?		
a		1
b		X
c	*	19
d		23
e		6
A patient is diagnosed with mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke (MELAS), which is a mitochondrial genetic disorder. Which of the following medications should be avoided?		
a		Warfarin
b	*	Valproic acid
c		Aspirin
d		Gabapentin
e		Leviteracitam
A patient is diagnosed with cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL). Which of the following is true?		
a		Pseudobulbar palsy is a rare complication
b	*	Mutation of the Notch3 gene
c		Skin biopsy is diagnostic
d		Strokes are rare complications
e		None of the above
The triad of dysmorphic features, periodic paralysis, and cardiac arrhythmias is part of Anderson-Tawil syndrome. This syndrome is associated with what mutation?		
a		Sodium channel gene
b	*	Potassium channel gene
c		Dopamine synthesis gene
d		Triple repeat disorder
e		X-linked recessive
The majority of inborn errors of metabolism are inherited in what fashion?		
a		X-linked recessive
b		Autosomal dominant
c		Sporadic
d	*	Autosomal recessive
e		None of the above
Neurofibromatosis type 2 (NF2) is associated with meningiomas and acoustic neuromas (often bilateral). NF1 has better prognosis and is associated with a lower incidence of central nervous system (CNS) tumors. The NF1 gene codes for neurofibromin. What is the function of this protein?		
a		ATPase associated
b	*	Tumor suppressor
c		Pro-oncogene
d		cAMP associated
e		None of the above
NF1 is inherited in what fashion and is associated with which chromosome?		
a		AR: 15
b	*	AD: 17
c		AD: 22
d		X-linked
e		AR: 9
Duchenne’s muscular dystrophy (DMD) is the most common type of muscular dystrophy. Which statement is true?		
a		Spontaneous transmission is the most common
b		Autosomal dominant transmission is the most common
c	*	X-linked transmission is the most common

d		The size of the mutation increases the severity of the disease
e		Missense mutation is the most common cause of DMD
Which of the following is the most common hereditary ataxia syndrome?		
a		Vitamin E deficiency
b		Refsum disease
c	*	Friedreich's ataxia (FA)
d		Hereditary motor and sensory neuropathy
e		None of the above
A 20-year-old female with progressive ataxia and gait disturbance is found to have FA. Which of the following is true?		
a	*	Almost 100% of patients are wheelchair bound by age 45
b		It is inherited in an autosomal dominant fashion
c		It is most prevalent in the African American populations
d		The average age of onset is 40 years old
e		None of the above
Which chromosome does the frataxin gene expansion occur on?		
a		2
b	*	9
c		12
d		21
e		14
A 30-year-old male with hx of Huntington's disease (HD) has a father who recently passed away at age 50 with the same disease. Which of the following is true?		
a	*	There will be gross atrophy of the caudate and putamen
b		Patients with HD only have chorea and no bradykinesia
c		Dementia is a rare complication of HD
d		Juvenile HD accounts for the majority of patients with this disease
e		None of the above
Which of the following is not considered part of the differential diagnosis of HD?		
a		Wilson's disease
b		Neuroacanthocytosis
c		Lupus
d		Thyroid disease
e	*	All of the above are part of the differential
A patient with a well-known family history of Alzheimer's dementia (AD) starts developing memory issues. Which of the following is true regarding familial AD?		
a		There have been no genes associated with this disorder
b	*	There are four major loci that have been found associated with AD
c		Lipoprotein E epsilon 3 has been a known risk factor
d		Down syndrome patients are protected from AD
e		None of the above
Which of the following statements is true regarding episodic ataxia type 1 and 2?		
a	*	Episodic ataxia type 1 is associated with continuous myokymia
b		Episodic ataxia type 1 and 2 are autosomal recessive disorders
c		Episodic ataxia 1 is autosomal recessive, and type 2 is autosomal dominant
d		Episodic ataxia type 1 is associated with hemiplegic migraines
e		None of the above
A 25-year-old female patient presents with cerebellar ataxia, night blindness, and degeneration of the retina. She also has polyneuropathy and sensorineural deafness. A lumbar puncture (LP) is performed, and cerebrospinal fluid (CSF) protein is elevated. Which of the following is true?		
a		Steroid therapy should be instituted immediately
b		This is inherited in an autosomal dominant pattern

c	*	There will be elevated phytanic acid in the plasma and urine
d		There is no treatment for this disorder
e		None of the above
What is the most common genetic alteration associated with meningiomas?		
a		Defect on chromosome 1
b	*	Loss of NF2 gene on chromosome 22
c		Trisomy 21
d		Monosomy 8
e		None of the above
Which of the following is or are part of the differential diagnosis for Kennedy's disease?		
a		Amyotrophic lateral sclerosis (ALS)
b		Myasthenia gravis
c		Syphilis
d		Spinal muscular atrophy
e	*	All of the above
Which of the following is the most common misdiagnosed disease in Kennedy's disease?		
a	*	ALS
b		Myasthenia gravis
c		Syphilis
d		Spinal muscular atrophy
e		Inclusion body myositis
A 15-year-old girl presents after having a generalized tonic-clonic seizure.She has noticed that, when she brushes her teeth or combs her hair in the morning, she occasionally experiences a brief jerking movement in her upper extremities. Past medical history is otherwise unremarkable. Her father was also diagnosed with epilepsy as a teenager, and he remains on antiepileptic medication. The patient's examination findings are normal. You obtain an electroencephalogram (EEG), which reveals occasional generalized bilateral polyspikes and spike wave complexes at 4 Hz. Which of the following statements is true?		
a		This disorder has an abnormality on chromosome 2
b		This disorder is inherited in an autosomal recessive pattern
c		This disorder is not genetic but sporadic
d	*	This disorder is inherited in an autosomal dominant fashion
e		None of the above
A 21-year-old male presents with confusion, memory difficulty, and psychosis.He is diagnosed with extensive white matter changes, and on magnetic resonance imaging (MRI), he is found to have elevated urine sulfatide. Which of the following is true regarding the genetics of this disorder?		
a		Autosomal dominant
b		Chromosome 1p
c	*	Autosomal recessive
d		Sporadic
e		None of the above
A 2-month-old boy presents with severe nystagmus, titubation, and weakness. At 3 months, he developed ataxia and cognitive delay. The patient is found to have Pelizaeus-Merzbacher disease. This disease is caused by a mutation on the PLP1 gene. Which chromosome is associated with this gene?		
a		1
b		21
c		12
d	*	X
e		None of the above
Wilson's disease is inherited in an autosomal recessive fashion and is associated with chromosome Which of the following is true?		
a		Patients have elevated serum copper levels
b	*	Patients have low ceruloplasmin levels

c		Patients have decreased urinary copper levels
d		The liver function test results are normal
e		None of the above
Which of the following has been associated with polyostotic fibrous dysplasia,hyperpigmented skin macules, and precocious puberty?		
a		Gardner's syndrome
b		Hand-Schüller-Christian disease
c	*	McCune-Albright syndrome
d		Guillain-Barré syndrome
e		None of the above
Of all primary tumors, which one has the most predilection toward metastasizing to the brain?		
a		Lung
b		Breast
c	*	Melanoma
d		Colon cancer
e		Lymphoma
Which of the following primary tumors account for the majority of all metastatic brain tumors?		
a	*	Lung
b		Breast
c		Melanoma
d		Colon cancer
e		Lymphoma
A patient is found to have metastatic cancer to the brain. Which of the following besides headache is the most common presenting symptom?		
a		Stroke
b		Hemorrhage
c	*	Seizure
d		Nausea
e		None of the above
A patient is found to have a brain stem glioma. More than 75% of these tumors are in patients in what age group?		
a	*	0 to 20
b		21 to 40
c		40 to 60
d		Over 60
e		None of the above. They occur in all age groups equally
A 56-year-old Caucasian female is found to have metastatic brain cancer. On imaging studies, the lesions are hemorrhagic. Which of the following would be a possible primary tumor?		
a		Lymphoma
b	*	Melanoma
c		Meningioma
d		Neurofibroma
e		Schwannoma
Which of the following is the most common endocrine dysfunction seen with craniopharyngiomas?		
a		Adrenal failure
b	*	Hypothyroidism
c		Diabetes insipidus
d		Diabetes mellitus
e		None of the above
A patient with a retrochiasmal craniopharyngioma is associated with hydrocephalus. Which of the following is also associated?		
a	*	Horizontal double vision

b		Seizures
c		Electrolyte abnormalities
d		Amenorrhea
e		Orthostatic hypotension
Which of the following treatments for ependymomas is considered the most effective therapy?		
a		Monitor closely
b	*	Surgical excision
c		Chemotherapy
d		Radiation
e		None of the above
Which of the following is the most common type of primary brain tumor?		
a		Lymphoma
b	*	Glioblastoma multiforme (GBM)
c		Meningioma
d		Pituitary adenoma
e		None of the above
Which of the following has the highest potential for increasing the risk of secondary glioblastoma?		
a	*	Hx of whole brain radiation
b		Hx of multiple computed tomography (CT) scans
c		Cellular telephone use
d		Hx of chemotherapy
e		Hx of head trauma
Which of the following is the most common clinical manifestation of glioblastoma multiforme?		
a		Headache
b		Seizure
c		Focal neuro deficit
d		Mental status change
e	*	All of the above occur in almost equal frequency
Which of the following tumors most commonly metastasizes to the leptomeninges?		
a		Small cell lung cancer
b	*	Adenocarcinoma
c		Breast
d		Lymphoma
e		None of the above
A 76-year-old male with a history of adenocarcinoma is found to have leptomeningeal carcinomatosis. The family and the patient decide they do not want any treatment. What is the usual mortality associated with untreated patients?		
a	*	1 month
b		6 months
c		1 year
d		5 years
e		None of the above
Patients with known leptomeningeal carcinomatosis usually can have multiple presenting complaints. Which of the following is one of the most common complaints?		
a		Memory loss
b		Incontinence
c		Sensory loss
d	*	Seizures
e		All of the above
A 68-year-old male with a history of metastatic small cell lung cancer has complaints of headaches, diplopia, as well as neck and back pain with nuchal rigidity. The patient is found to have leptomeningeal carcinomatosis. Which of the following is the most common area of the central nervous system (CNS) that is involved?		

a	*	Cranial nerves
b		Spinal root
c		Cerebral hemisphere
d		Anterior horn cells
e		None of the above
A 68-year-old male with a history of melanoma cancer is found to have complaints of headaches, diplopia, and neck and back pain with nuchal rigidity. The patient is found to have leptomeningeal carcinomatosis. Which of the following is the next best test to confirm the diagnosis?		
a		Magnetic resonance imaging (MRI)
b		CT scan
c		Biopsy
d	*	Spinal tap
e		None of the above
Which of the following is probably the most common CT scan finding with oligodendrogliomas?		
a		Fat
b	*	Calcifications
c		Cyst
d		“Fried egg” appearance
e		None of the above
What percentage of all intracranial tumors are pituitary tumors?		
a		1%
b	*	15%
c		45%
d		90%
e		None of the above
Which of the following is the most lethal complication of pituitary tumors?		
a		Excessive prolactin
b		Decreased growth hormone
c	*	Apoplexy
d		Metastasis
e		None of the above
Which of the following medications can treat a prolactinoma?		
a		Metoclopramide
b		Fluorouracil (5-FU)
c		Prednisone
d	*	Bromocriptine
e		None of the above
A 33-year-old male with HIV/AIDS develops a brain tumor. He is diagnosed with primary central nervous system (CNS) lymphoma. What is the median survival for this patient if he undergoes radiation alone?		
a		4 weeks
b	*	4 months
c		4 years
d		1 year
e		None of the above
Which of the following is the most common malignant skull-based tumor?		
a		Osteosarcoma
b	*	Multiple myeloma
c		Chondrosarcoma
d		Fibrosarcoma
e		Ewing’s sarcoma
Which of the following statements regarding radiation necrosis in the CNS is true?		
a		MRI of the brain can differentiate radiation necrosis from tumorrelated changes

b		Radiation necrosis only occurs within a few weeks of radiation exposure
c	*	MRI of the brain cannot differentiate radiation necrosis from tumor changes
d		A history of diabetes does not increase your risk for radiation necrosis
e		None of the above
A 56-year-old male with a primary brain tumor has a history of whole brain radiation and presents with new-onset seizures. Which of the following would be a confirmatory test to determine the cause of the seizure?		
a		CT scan
b		MRI brain
c	*	Surgical biopsy
d		X-ray
e		None of the above
A 34-year-old female presents with acute psychotic symptoms. She is described as being immobile, mute, and having a waxy flexibility. Which of the following statements is false?		
a		Nonconvulsive status epilepticus is part of the differential
b		An accurate history is rarely available from the patient
c	*	Patients with this disorder only have symptoms while an examiner or bystander is present, and they disappear when no one is around
d		Grasp reflex is a secondary feature of catatonia
e		None of the above
A 22-year-old female presents during pregnancy with abnormal movements. There is no family history of any neurologic disorders. She states that during stressful times, the movements become worse, and her husband states that they disappear during sleep. She is noted to have a "milkmaid" grip. Which of the following is true?		
a		This is the most common neurologic disorder during pregnancy
b	*	Rheumatic disease used to be a common cause for this disorder
c		This is conversion disorder
d		This is essential tremor
e		None of the above
Chorea is defined as a state of excessive movements that are irregular, do not repeat, and are abrupt in character. Which of the following statements is false?		
a		Huntington's chorea is the most well-studied chorea syndrome
b		The basal ganglia is the sight of dysfunction
c	*	Physostigmine cannot overcome anticholinergic-induced chorea
d		Decreased gamma-aminobutyric acid (GABA) levels in the basal ganglia is seen in these patients
e		None of the above
A 75-year-old male develops progressive dementia, Parkinson's features, and limb apraxia. On examination, the patient also has signs of supranuclear palsy. Which of the following is true?		
a		The patient has Lewy-body dementia
b		Males develop this disorder more frequently
c		Resting tremor is the most common feature
d	*	Hallucinations are not a common feature of this disorder
e		None of the above
A 56-year-old male presents with complaints of difficulty feeding. He states his hand starts to shake when he brings a utensil to his mouth. Alcohol seems to relieve the problem, and therefore, he has started drinking more frequently. There are no problems when the patient is relaxed and sitting still. Which of the following is false?		
a		The problem is located in the Mollaret triangle near the brain stem
b		These symptoms often have isolated head tremor
c		Both genders are affected equally
d		About half the patients have a strong family history
e	*	None of the above
Which of the following medications is the most effective treatment for essential tremor?		
a		Clonidine
b		Methylpentynol

c		Ropinirole
d	*	Primidone
e		None of the above
Which of the following is not an exclusion criteria for essential tremor?		
a		Primary orthostatic tremor
b		Isolated voice tremor
c		Isolated leg tremor
d	*	Isolated head tremor
e		Writing tremor only
Friedreich's ataxia (FA) is inherited in what fashion?		
a		Autosomal dominant
b		X-linked
c		Sporadic
d	*	Autosomal recessive
e		None of the above
What percentage of patients with FA are wheelchair-bound by their midfourth decade of life?		
a		10%
b		25%
c		50%
d		75%
e	*	95%
A patient presents with progressive dementia, chorea movements, and abnormal behavior. His father had a similar disease and died at an early age due to suicide. Which of the following statements is true?		
a		This disorder is sporadic in nature
b	*	It is due to an expansion of a cysteine-adenosine-guanine repeat
c		It is inherited in an autosomal recessive fashion
d		Anticipation is infrequent in this disorder
e		None of the above
A 65-year-old male presents with gradual gait disturbance, urinary incontinence, and progressive dementia over the past year. The gait is described as shuffling and magnetic. On examination, there is no papilledema, rigidity, or tremor. Magnetic resonance imaging (MRI) is performed and demonstrates some atrophy but markedly enlarged ventricles. Which of the following is the next best step?		
a		Initiate acetylcholinesterase inhibitor
b	*	High-volume spinal tap
c		Initiate carbidopa/levodopa
d		Urology consult
e		Transfer the patient to a nursing home for long-term care
A patient with normal pressure hydrocephalus (NPH) is being evaluated for shunt placement. Which of the following statements is true?		
a	*	A patient with predominant gait difficulty and minimal cognitive deficit is an ideal candidate for shunt placement
b		Significant white matter lesions on MRI is of minimal significance
c		Cortical atrophy on MRI is a positive prognostic indicator for shunt placement
d		Indwelling cerebrospinal fluid (CSF) catheters have no role in this diagnosis
e		Reduction of bladder hyperactivity after high-volume LP is a negative prognosis for shunt surgery
Which of the following statements regarding Parkinson's disease (PD) is false?		
a		It is typically asymmetric
b	*	Tremor typically begins in the lower extremity
c		Gait difficulty is a later finding
d		Sleep disturbances are common
e		Resting tremor is one of the best clinical predictors for pathologic diagnosis
Which of the following is not part of the three cardinal signs of PD?		

a		Resting tremor
b		Bradykinesia
c	*	Postural instability
d		Rigidity
e		None of the above
A 76-year-old male with a 15-year history of PD develops short-term memory difficulty and some visuospatial impairment. The patient's language is completely intact. What percentage of patients develop dementia?		
a		1%
b	*	25%
c		75%
d		100%
e		None of the above
A 34-year-old male develops bradykinesia, tremor, shuffling gate, and is diagnosed with PD. Which of the following has been associated with other causes of PD?		
a		Well water
b		Pesticides
c		Herbicides
d		1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)
e	*	All of the above
Of all causes of PD, what percentage is due to the known genetic causes?		
a	*	5%
b		25%
c		50%
d		75%
e		99%
Which of the following is an FDA-approved treatment for PD?		
a		Pallidotomy
b	*	Deep brain stimulation
c		Protein redistribution diet
d		Thalamotomy
e		All of the above
A 45-year-old male is found to have increased muscle tone in one limb. Which of the following is part of the classification of dystonia?		
a		Focal
b		Segmental
c		Multifocal
d		Hemidystonia
e	*	All of the above
Which of the following disorders is considered an alpha-synucleinopathy as well as a tauopathy?		
a		Multisystem atrophy
b		Lewy body disease
c	*	Progressive supranuclear palsy
d		PD
e		Pantothenate kinase 2 deficiency
Patients with multisystem atrophy (MSA) go on to develop Parkinsonism, autonomic failure, cerebellar, and pyramidal signs. What percentage of patients develops Parkinson's features?		
a		1%
b		10%
c		50%
d	*	90%
e		25%
Which of the following is not considered an extrapyramidal sign?		

a		Akathisia
b	*	Spasticity
c		Chorea
d		Athetosis
e		Stereotypy
Tardive dyskinesia typically occurs in patients that have been on which of the following medications for many years?		
a	*	Metoclopramide
b		Carbidopa
c		Ropinirole
d		Diphenhydramine
e		None of the above
Which of the following tests should be considered when evaluating a patient with tardive dyskinesia?		
a		Calcium level
b		Serum ceruloplasmin
c		Thyroid function
d		Complete blood count
e	*	All of the above
Which of the following is the most common manifestation of Wilson's disease in children?		
a		Neuropsychiatric symptoms
b		Seizures
c	*	Hepatic disease
d		Kayser-Fleisher rings
e		All of the above occur equally
Which of the following statements is true regarding acute disseminated encephalomyelitis (ADEM)?		
a		It is indistinguishable from multiple sclerosis
b	*	It is a nonvasculitic demyelinating process
c		Genetics probably play no role in this disease
d		Multiple sclerosis (MS) is usually a monophasic illness
e		None of the above
What percentage of patients that develop ADEM occurs in children under the age of 10?		
a		1%
b		95%
c	*	80%
d		99%
e		None of the above
Which of the following is helpful in distinguishing ADEM from MS?		
a		Age younger than 12
b		Fever
c		Seizures
d		Recent immunization
e	*	All of the above
A 17-year-old patient presents with ankylosing spondylitis. Which of the following statements is true?		
a		More females than males are affected
b	*	Uveitis is a possible associated condition
c		Approximately 25% of the US population is affected
d		The pain associated with this condition is worse in the afternoon and improves in the morning
e		None of the above
What percentage of patients with ankylosing spondylitis have HLA-B27 antigen?		
a		1%
b		10%
c		50%

d		75%
e	*	95%
What percentage of patients with Bell's palsy have recurrence?		
a	*	15%
b		30%
c		70%
d		90%
e		None of the above
Which of the following statements regarding Bell's palsy is true?		
a		Men are more likely to be affected than women
b		The lowest incidence is in persons older than age 60
c	*	Pregnant women are three times more likely to be affected than nonpregnant women
d		Overall, patients have a poor prognosis with Bell's palsy
e		None of the above
What percentage of patients with Behçet's disease have an associated oral ulcer?		
a		1%
b		10%
c		50%
d		75%
e	*	100%
Which of the following are hallmark features of MS?		
a		Neurologic deficits usually once in time
b	*	Recurrent neurologic deficits that are disseminated by space and time
c		Seizure disorder
d		Bilateral optic neuritis and transverse myelitis
e		None of the above
Which of the following is not part of the four standard categories used to describe the clinical course of MS?		
a		Relapsing remitting
b		Secondary progressive
c		Progressive relapsing
d		Primary progressive
e	*	All of the above
Which of the following subtypes of MS responds the least to treatment?		
a		Relapsing remitting
b		Secondary progressive
c		Progressive relapsing
d	*	Primary progressive
e		All of the above
Which of the following is the best way to diagnose MS?		
a		Lumbar puncture (LP)
b		Magnetic resonance imaging (MRI)
c		Computed tomography (CT) scan
d	*	Clinical
e		Positron emission tomography (PET) scan
What percentage of patients with MS have abnormalities detected on CT scan?		
a		5%
b		10%
c	*	33%
d		60%
e		100%
Which of the following is not part of the disease modifying drugs for the treatment of MS?		
a		Interferon beta-1b

b		Intravenous immunoglobulin (IVIG)
c		Glatiramer acetate
d		Interferon beta-1a
e	*	Methylprednisolone
What percentage of patients with MS will do well for 20 years and therefore would be considered to have benign MS?		
a	*	10%
b		25%
c		46%
d		78%
e		None of the above
Which of the following groups is most susceptible to contracting MS?		
a	*	Caucasian
b		Asian
c		Pacific Islander
d		African American
e		Ashkenazi Jew
Which of the following supports the autoimmune theory?		
a		Elevated eosinophils
b	*	Animal model of allergic encephalomyelitis
c		Response to steroids
d		All of the above
e		None of the above
What percentage of patients with definite MS have an abnormal response to visual evoked response?		
a	*	85%
b		5%
c		50%
d		35%
e		None of the above
Which of the following tests is the most useful in detecting suspected pontine lesions in MS patients?		
a	*	Brain stem auditory response
b		Somatosensory response
c		Nerve conduction study
d		Visual evoked response
e		None of the above
What is the average survival of patients with primary progressive MS?		
a		5 years
b		1 year
c		10 years
d		25 years
e	*	35 years
Which of the following is suggestive of worse prognosis in MS?		
a		Age of onset < 35 years
b		Acute onset of first symptoms
c	*	Cerebellar signs
d		Onset with sensory symptoms
e		None of the above
Which of the following describes Marchiafava-Bignami disease?		
a		Damage to the mamillary bodies
b		Bilateral occipital lobe infarctions
c	*	Demyelination of the corpus callosum
d		First noted in Irish men

e		Rapidly progressive
Which of the following viruses have been associated with MS?		
a	*	Herpes virus type 6 (HSV 6)
b		Human immunodeficiency virus (HIV)
c		Measles
d		Polio
e		None of the above
Which of the following is considered a variant of MS?		
a		Primary progressive MS
b		Marburg virus
c		Devic's disease
d		Schilder's disease
e	*	All of the above
Which of the following may develop neutralizing antibodies as a treatment of MS?		
a		Glatiramer acetate
b	*	Beta-interferon
c		Cyclophosphamide
d		Methotrexate
e		None of the above