# **Multiple-Choice Questions**

The Multiple-Choice Questions are an integral part of the issue. They are intended as a means of stimulating thought and helping participants assess general understanding of the material presented in this issue. For each item, select the *single best response*.

IMPORTANT: To earn credits toward ABPN Maintenance of Certification self-assessment (part 2), first complete the Self-Assessment Pretest online at *www.aan.com/continuum/cme*. Instructions for earning self-assessment appear on page 11 of this issue. After submitting the Self-Assessment Pretest, study the entire issue using your pretest results as a guide to direct your learning. Then complete the 40 Multiple-Choice Questions and issue evaluation online at *www.aan.com/continuum/cme*.

Upon completion of the Self-Assessment Pretest and Post-Reading Multiple-Choice Questions, participants may earn up to X *AMA PRA Category 1 Credits*<sup>TM</sup> toward self-assessment CME. *Category 1* CME credits not designated from self-assessment may be obtained by completing only the 40 Multiple-Choice Questions (up to 10 *AMA PRA Category 1 Credits*).

Up to 10 AMA PRA Category 1 Credits not designated for self-assessment may still be earned by completing **only** the Multiple-Choice Questions and issue evaluation.

Participants have up to 3 years from the date of publication to earn CME credits. No CME will be awarded for this issue after February 29, 2016.

- ▶ 1. Of the following classes of medications used in treating patients with neurodegenerative disorders, which is most likely to induce sudden sleep attacks?
  - A. anticholinergic
  - B. anticholinesterase
  - C. benzodiazepine
  - D. dopamine agonist
  - E. dopamine antagonist
- ▶ 2. Which of the following best describes the relationship between inadequate sleep and resident performance on neurocognitive and psychomotor tasks?
  - A. decreased accuracy on tasks
  - B. decreased speed or efficiency on task completion
  - C. inability to improve performance with increased mental effort
  - D. increased accuracy related to hypervigilance
  - E. no change on speed or accuracy of task completion

▶ 3. A 22-year-old man is seen in the sleep center for evaluation of bruxism. His neurologic examination and overnight polysomnogram results are unremarkable, other than occasional episodes of jaw clenching during non-REM sleep. Which of the following is the best next step in management? A. clonazepam B. melatonin C. oral appliance fitting D. positive airway pressure E. ropinirole
<ul> <li>▶ 4. A 51-year-old man is seen in follow-up for management of excessive daytime sleepiness. He recently underwent an overnight polysomnogram with the following results: apnea-hypopnea index of 28 events/h, supine apnea-hypopnea index of 36 events/h, and nadir oxygen saturation, 82%. Which of the following treatment strategies is recommended?  A. modafinil B. oral appliance fitting C. positional therapy D. positive airway pressure E. uvulopalatopharyngoplasty</li> <li>▶ 5. A 53-year-old man notes fatigue and poor sleep for the past 6 weeks, starting around the time of his father's death. Which of the following best describes his insomnia?  A. adjustment insomnia B. behavioral insomnia</li> </ul>
C. idiopathic insomnia D. inadequate sleep hygiene E. psychophysiologic insomnia
▶ 6. A 16-year-old girl has been sleeping 20 hours a day for the past few days. She has had three similar episodes over the past 2 years. During each episode, she sleeps most of the day and night, waking only to eat or go to the bathroom. During her few waking hours, she "eats everything in sight." Each episode resolved spontaneously about 2 weeks after it began. The first episode was attributed to depression because it began within a week of breaking up with her first boyfriend, but her mood has been fine since then, and no precipitants were identified for her subsequent episodes. Her sleep and other behaviors have been normal between the episodes. Which of the following diagnoses is most likely?  A. bipolar affective disorder  B. frontotemporal dementia  C. Kleine-Levin syndrome  D. Mollaret recurrent meningitis  E. variant Creutzfeldt-Jakob disease

•	<ul> <li>7. Which of the following is the major limitation of chronotherapy for treating delayed sleep-phase syndrome in children?</li> <li>A. effective in few patients</li> <li>B. full effects not achieved until at least 3 months after treatment onset</li> <li>C. sustained benefit requires rigorous compliance with target sleep schedule</li> <li>D. treatment is unpleasant and poorly tolerated</li> <li>E. treatment precipitates hyperactivity in 50% of patients</li> </ul>	
	<ul> <li>8. A 51-year-old factory worker reports difficulty sleeping after overnight shifts as well as excessive sleepiness when working at night. Which of the following medications is approved by the US Food and Drug Administration for symptom management in the setting of shift work disorder?</li> <li>A. melatonin</li> <li>B. modafinil</li> <li>C. oxazepam</li> <li>D. ramelteon</li> <li>E. zolpidem</li> </ul>	
•	<ul> <li>9. Which of the following sleep disorders is characterized by the simultaneous EEG findings of both non-REM sleep and active wakefulness?</li> <li>A. narcolepsy</li> <li>B. obstructive sleep apnea</li> <li>C. primary insomnia</li> <li>D. REM sleep behavior disorder</li> <li>E. shift work disorder</li> </ul>	
•	<ul> <li>No. Which of the following features is more characteristic of sleep-related epilepsy than of sleepwalking?</li> <li>A. duration greater than 3 minutes</li> <li>B. exacerbation by sleep deprivation</li> <li>C. highly stereotyped episodes</li> <li>D. occurrence during non-REM sleep</li> <li>E. positive family history</li> </ul>	
	<ul> <li>11. Which of the following categories of medications is considered to be a possible cause of secondary restless legs syndrome?</li> <li>A. antidepressants</li> <li>B. beta-adrenergic antagonists</li> <li>C. estrogen-containing oral contraceptives</li> <li>D. nonsteroidal anti-inflammatory drugs</li> <li>E. opioids</li> </ul>	
•	▶ 12. A 19-year-old college student is seen in clinic for excessive daytime sleepiness. He routinely goes to bed around 3:00 AM because he does not feel significantly tired before this time; as a result, he has difficulty staying awake during morning classes. Which of the following strategies is most likely to improve his wakefulness? A. avoidance of caffeine B. evening zolpidem C. morning light exposure D. morning melatonin E. vitamin B <sub>12</sub> injections	

<ul> <li>▶ 13. Which of the following physical examination findings correlates most closely with the presence of obstructive sleep apnea?</li> <li>A. furrowed tongue</li> <li>B. gingival hyperplasia</li> <li>C. retrognathia</li> <li>D. temporomandibular joint dislocation</li> <li>E. tonsillar atrophy</li> </ul>
<ul> <li>14. Which of the following would be considered a maladaptive behavior in patients with chronic insomnia?</li> <li>A. consuming one alcoholic beverage before sleep each night</li> <li>B. eliminating caffeine intake after noon</li> <li>C. intermittently using over-the-counter sleep aids (eg, analgesics with PM formulation)</li> <li>D. limiting time spent in bed while awake</li> <li>E. turning off televisions and other screens while attempting to fall asleep</li> </ul>
<ul> <li>▶ 15. Compared to controls, patients with Huntington disease have an increased incidence of which of the following disorders?</li> <li>A. narcolepsy</li> <li>B. nocturnal frontal lobe epilepsy</li> <li>C. periodic limb movements of sleep</li> <li>D. restless legs syndrome</li> <li>E. sleep-disordered breathing</li> </ul>
▶ 16. A 14-year-old girl who is the starting goalie on her club soccer team has recently allowed several goals that she should have stopped easily, but her legs suddenly buckled as she ran toward the ball. She was able to get back to her feet within 15 seconds and in each case played the rest of the game without incident. She has been extremely sleepy in recent months, but her family attributes this to her hectic soccer practice schedule. Although she does not volunteer the information, she has had about 10 episodes in the past year in which she awoke about 1 hour earlier than usual and was unable to move her limbs for a few minutes. Which of the following abnormalities is most likely to be present?  A. high serum and spinal fluid tryptophan  B. high serum melatonin  C. high spinal fluid tau protein  D. low serum immunoglobulin E  E. low spinal fluid hypocretin
<ul> <li>▶ 17. In children, mild obstructive sleep apnea most commonly presents with which of the following symptoms?</li> <li>A. excessive daytime sleepiness</li> <li>B. hyperactivity</li> <li>C. hyperacusis</li> <li>D. hypophonic speech</li> <li>E. orthopnea</li> </ul>

<ul> <li>▶ 18. Which of the following is true of the maintenance of wakefulness test but not of the multiple sleep latency test?</li> <li>A. patients are instructed to try to stay awake</li> <li>B. standard testing protocol extends over more than 6 hours</li> <li>C. test is conducted during the patient's typical waking hours</li> <li>D. test is only reliable in patients with sufficient amount of sleep the night before</li> <li>E. test results are typically abnormal in patients with narcolepsy</li> </ul>	
<ul> <li>▶ 19. Presence of which of the following factors is most specific for narcolepsy?         <ul> <li>A. cataplexy</li> <li>B. HLA-DQB1*0602 positivity</li> <li>C. hypnagogic hallucination</li> <li>D. hypnopompic hallucination</li> <li>E. sleep paralysis</li> </ul> </li> </ul>	
<ul> <li>▶ 20. Which of the following medical conditions is associated with a higher risk of obstructive sleep apnea?</li> <li>A. Goodpasture syndrome</li> <li>B. Marfan syndrome</li> <li>C. polycystic ovarian syndrome</li> <li>D. rheumatoid arthritis</li> <li>E. schizophrenia</li> </ul>	
▶ 21. A 2-year-old boy resists going to bed every night. Which of the following bedtime routines would be most appropriate to introduce?  A. a bath B. milk and cookies C. sunlamp exposure D. a video E. vigorous play	
▶ 22. A 14-year-old boy has a 6-month history of episodes of sudden, brief posturing during sleep. The episodes are characterized by extension of his left arm, head rotation to the left, flexion of the right arm, and abduction of the right shoulder. Each episode lasts about 15 seconds, and he remains asleep before, during, and after the episode. They happen about twice a week. He has had two episodes during the day, with preserved consciousness. Which of the following is the most likely diagnosis?  A. nocturnal frontal lobe epilepsy B. nocturnal panic disorder C. periodic limb movement disorder D. REM sleep behavior disorder E. sleepwalking variant	

<ul> <li>▶ 23. A 29-year-old woman in her second year of neurology residency training is frequently seen sleeping during department grand rounds and in resident lectures. Faculty members have commented on a recent decrease in her clinical performance, and she often stays at the hospital later than her colleagues to finish patient notes. She acknowledges sleeping 5 to 6 hours per night and feeling fatigued during the day. Which of the following is the best next step in management?</li> <li>A. change work schedule to include half of current clinical duties</li> <li>B. prescribe melatonin on non–call nights</li> <li>C. prescribe zolpidem on non–call nights</li> <li>D. refer for overnight polysomnogram</li> <li>E. screen for depression</li> </ul>
▶ 24. A 60-year-old man has a 6-month history of episodes of repetitive movements during sleep. His wife says that they typically occur a few hours before he would normally awaken. He punches at the pillow during his sleep, then abruptly wakes up and interacts appropriately, saying that he had been dreaming of being attacked by aliens. He has had about 10 episodes. Which of the following is the most likely diagnosis?  A. nocturnal frontal lobe epilepsy B. nocturnal panic disorder C. periodic limb movement disorder D. REM sleep behavior disorder E. sleepwalking variant
▶ 25. A 63-year-old man is seen for a possible sleep disorder. Over the past several years, he has injured himself on multiple occasions while climbing out of bed during the night. During an overnight polysomnogram, he shouts and occasionally flails his arms as if he is in an altercation. This patient is at increased risk of developing which of the following neurologic conditions?  A. ALS  B. Alzheimer disease  C. cerebral amyloid angiopathy  D. dementia with Lewy bodies  E. subacute combined degeneration
<ul> <li>▶ 26. A 49-year-old woman is seen in the office with complaints of intermittent painful sensations in her legs. A diagnosis of restless legs syndrome (RLS) is considered. Which of the following diagnostic features is essential for making a clinical diagnosis of RLS?</li> <li>A. description of pain as muscle cramps</li> <li>B. improvement of symptoms with activity</li> <li>C. improvement of symptoms with rest or inactivity</li> <li>D. symmetric symptoms affecting both legs</li> <li>E. worsening of symptoms shortly after awakening in the morning</li> </ul>

<ul> <li>▶ 27. Which of the following patient populations has a higher prevalence of irregular sleep-wake rhythm disorder?</li> <li>A. college students</li> <li>B. older adults with dementia</li> <li>C. patients with obstructive sleep apnea</li> <li>D. perimenopausal women</li> <li>E. shift workers</li> </ul>	
<ul> <li>▶ 28. In patients with sleep-disordered breathing, continuous positive airway pressure has most convincingly been shown to reduce which of the following?</li> <li>A. blood glucose</li> <li>B. blood pressure</li> <li>C. body mass index</li> <li>D. risk of heart attack</li> <li>E. risk of stroke</li> </ul>	
▶ 29. Which of the following best expresses the effect of age on the expected results of the multiple sleep latency test in individuals with narcolepsy?  A. increasing mean sleep latency with advancing age B. increasing number of sleep-onset REM periods with advancing age C. increasing test sensitivity with advancing age D. increasing test specificity with advancing age E. no effect of age	
<ul> <li>▶ 30. Which of the following medications is most effective for REM sleep behavior disorder?</li> <li>A. clonazepam</li> <li>B. modafinil</li> <li>C. nortriptyline</li> <li>D. sodium oxybate</li> <li>E. venlafaxine</li> </ul>	
<ul> <li>▶ 31. Which of the following conditions is most closely associated with daytime sleepiness?</li> <li>A. blepharospasm</li> <li>B. cervical dystonia</li> <li>C. essential tremor</li> <li>D. oromandibular dystonia</li> <li>E. writer's cramp</li> </ul>	
<ul> <li>▶ 32. Which of the following medications is most likely to be effective for both the excessive daytime somnolence and the cataplexy experienced by patients who have narcolepsy?</li> <li>A. armodafinil</li> <li>B. methamphetamine</li> <li>C. methylphenidate</li> <li>D. modafinil</li> <li>E. sodium oxybate</li> </ul>	

<ul> <li>▶ 33. A 38-year-old woman reports difficulty initiating sleep, with associated daytime fatigue and poor work performance. She is counseled to proceed to bed only when she feels sleepy and to get out of bed and move to another room if she has not fallen asleep within 10 minutes. Which of the following cognitive-behavioral therapy strategies does this plan incorporate?</li> <li>A. biofeedback</li> <li>B. paradoxical intention</li> <li>C. relaxation therapy</li> <li>D. sleep-restriction therapy</li> <li>E. stimulus control therapy</li> </ul>
▶ 34. A 52-year-old woman with restless legs syndrome is seen in clinic for follow-up. She had noticed good control of her symptoms with use of pramipexole 0.5 mg at 7:00 PM for about 2 years, but over the past 6 months she has noted onset of restlessness earlier in the day. Which of the following is the most likely cause for the change in her symptoms?  A. augmentation
B. coexistent obstructive sleep apnea C. impulse control disorder D. medication noncompliance E. sensory neuropathy
<ul> <li>▶ 35. A 76-year-old man with congestive heart failure undergoes a polysomnogram for excessive daytime sleepiness; a diagnosis of central sleep apnea is made. Which of the following is the most appropriate first step in management?</li> <li>A. acetazolamide</li> <li>B. adaptive servo-ventilation</li> <li>C. optimization of heart failure treatment</li> <li>D. oxygen supplementation</li> <li>E. uvulopalatopharyngoplasty</li> </ul>
<ul> <li>▶ 36. Which of the following is considered a first-line treatment for childhood obstructive sleep apnea?</li> <li>A. continuous positive airway pressure</li> <li>B. mandibular advancement</li> <li>C. nasal steroids</li> <li>D. tracheostomy</li> <li>E. uvulopalatopharyngoplasty</li> </ul>
<ul> <li>▶ 37. For patients with which of the following conditions is it appropriate to use portable sleep monitoring instead of standard attended in-laboratory polysomnography?</li> <li>A. congestive heart failure</li> <li>B. Duchenne muscular dystrophy</li> <li>C. high pretest probability of severe obstructive sleep apnea</li> <li>D. insomnia</li> <li>E. severe asthma</li> </ul>

<ul> <li>▶ 38. Which of the following is a potential limitation to the use of "night-float" systems as a way to combat resident fatigue and ensure compliance with the Accreditation Council for Graduate Medical Education resident work-hour limits?</li> <li>A. difficult to enact in programs with small numbers of residents</li> <li>B. difficult for residents to assimilate back to a day schedule</li> <li>C. hard to cover services at single, high-volume institutions</li> <li>D. poor resident satisfaction with night-float schedules</li> <li>E. residents spend off time catching up on work as opposed to sleep</li> </ul>	
<ul> <li>▶ 39. Deficiency of which of the following transmitters causes dysfunction of the sleep-wake switch, resulting in narcolepsy?</li> <li>A. dopamine</li> <li>B. glutamate</li> <li>C. orexin</li> <li>D. serotonin</li> <li>E. somatostatin</li> </ul>	
<ul> <li>▶ 40. Which of the following unregulated supplements commonly used for insomnia has been associated with a risk of hepatic toxicity?</li> <li>A. chamomile</li> <li>B. kava kava</li> <li>C. melatonin</li> <li>D. passionflower</li> <li>E. valerian</li> </ul>	