28. A 55-year-old man with narcolepsy type 1 is undergoing a follow-up visit. At his initial visit, his symptoms included severe daytime sleepiness, nocturnal sleep fragmentation, and several episodes of cataplexy each week; most of these are now markedly improved as a result of pharmacotherapy. He is currently taking methylphenidate (short-acting) 10 mg twice per day (11 AM and 2 PM), extended-release dextroamphetamine/amphetamine 20 mg once in the morning, paroxetine 60 mg twice daily, and sodium oxybate 9 g in two divided doses. Since his last visit 3 months ago, he has had a single episode of cataplexy, which occurred while he was watching a sitcom on television. His Epworth Sleepiness Scale score is currently 6/24. He reports no issues with driving safety or difficulty at work.
He is scheduled to undergo elective hip replacement next month and wants to know if there are any perioperative risks related to his narcolepsy.

Which of the following statements is most correct?

A. Regular use of methylphenidate can prolong the effect of anesthesia.
B. Inhaled anesthetics are associated with an increase in the frequency and duration of postoperative cataplectic attacks.
C. Chronic amphetamine use is associated with autonomic dysregulation and perioperative complications.
D. The postoperative use of opiates should prompt an increase in sodium oxybate dose to maintain effectiveness.

29. A 58-year-old man reports having experienced difficulties with staying asleep at night for the last several years. His desired bedtime is 10 PM, but he usually falls asleep around 7:30 PM while watching television and having some after-dinner cocktails. He ends up waking up in front of the television between 2 and 3 in the morning and has a difficult time falling back to sleep, whether or not he moves into bed. He generally feels alert in the morning, but later in the day he feels tired and fatigued, which he attributes to not sleeping enough at night. He does not have a roommate or regular bed partner who could report any abnormalities that occur during sleep. He is otherwise healthy and takes no regular medications. He does not use tobacco. He drinks one cup of coffee with breakfast and again around noon each day, and he has at least three alcoholic drinks each evening after dinner.

According to the information provided, which of the following is the most likely sleep-related diagnosis for this patient?

A. Advanced sleep-wake phase disorder
B. Circadian sleep-wake phase disorder, not otherwise specified
C. Non–24-h sleep-wake rhythm disorder
D. OSA

30. A 58-year-old man with a medical history of depression and hypertension presents to sleep clinic because his wife complains he has been "acting out his dreams." He has had these episodes off and on for the past 5 years. The episodes occur after a few hours of his falling asleep. On the nights these episodes occur, he appears tremulous, has erratic movements, and appears to be defending himself from something. During some of the episodes, he struck his wife and bruised her. When she has awakened him, he has reported intense dreams of being attacked by a stranger. He has no history of gait, tremor, or memory issues.

His medications include bupropion and diltiazem. He smokes about 0.5 packs/day; in addition, he drinks with his buddies on the weekends and can be intoxicated when he comes home. He reports experiencing significant stress in his management role at work. He underwent a sleep study, during which no unusual behaviors were seen and he had no sleep apnea. During the sleep study, frequent phasic twitching of the arms during REM sleep was noted in upper-limb flexor muscle–group EMG leads.

What should be the next step in the management of this case?

A. Recommend long-term alcohol avoidance.
B. Prescribe melatonin.
C. Prescribe clonazepam.
D. Recommend an alternative to bupropion.

31. The pharyngeal critical opening pressure (Pcrit) model describes the physiologic behavior of the upper airway as a Starling resistor that permits or interrupts airflow and identifies conditions of individuals with or without sleep-disordered breathing (Figure 1).

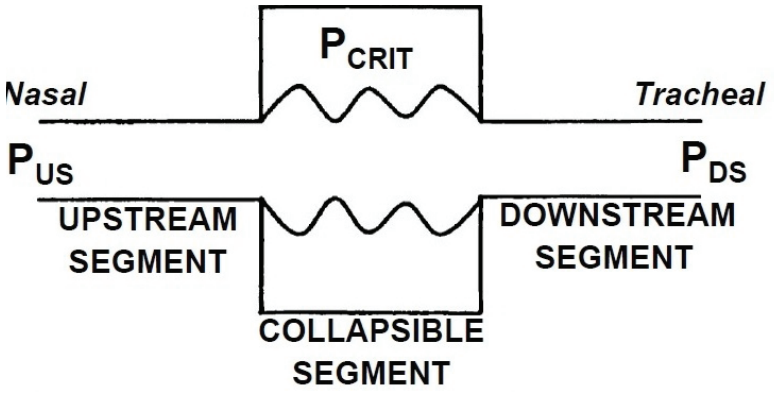

Figure 1. Pus = upstream pressure; Pcrit = critical opening pressure; Pds = downstream pressure. Figure adapted from Patil SP, Schneider H, Schwartz AR, et al. Adult obstructive sleep apnea: pathophysiology and diagnosis. *Chest*. 2007;132(1):325-337.

Which of the following mathematical situations—in which Pus = upstream pressure and Pds = downstream pressure—best describes a patient with partial interruption of airflow as with an obstructive hypopnea?

A. Pus > Pcrit > Pds
B. Pus> Pds > Pcrit
C. Pus = Pds > Pcrit
D. Pcrit > Pus > Pds

32. Scientific advances have yielded marked improvements in our understanding of the genetic causes of and associations with a number of sleep disorders, including derangements of the circadian rhythm, restless legs syndrome, and narcolepsy.

In terms of using human leukocyte antigen (HLA) assessment to identify cases of narcolepsy type 1, which of the following test characteristics will be highest when using HLA subtype DQB1*0602 in screening for disease in an unselected population?

A. Sensitivity and positive predictive value
B. Sensitivity and negative predictive value
C. Specificity and positive predictive value
D. Specificity and negative predictive value

33. A 5-year-old girl undergoes vagal nerve stimulator (VNS) implantation for refractory seizure disorder despite the use of two antiepileptic medications. Her parents subsequently note increasing frequency of nocturnal awakenings and a greater degree of daytime fatigue, and the patient undergoes polysomnography for further evaluation. Figure 1 shows a 4-min epoch, which is representative of the entire night.

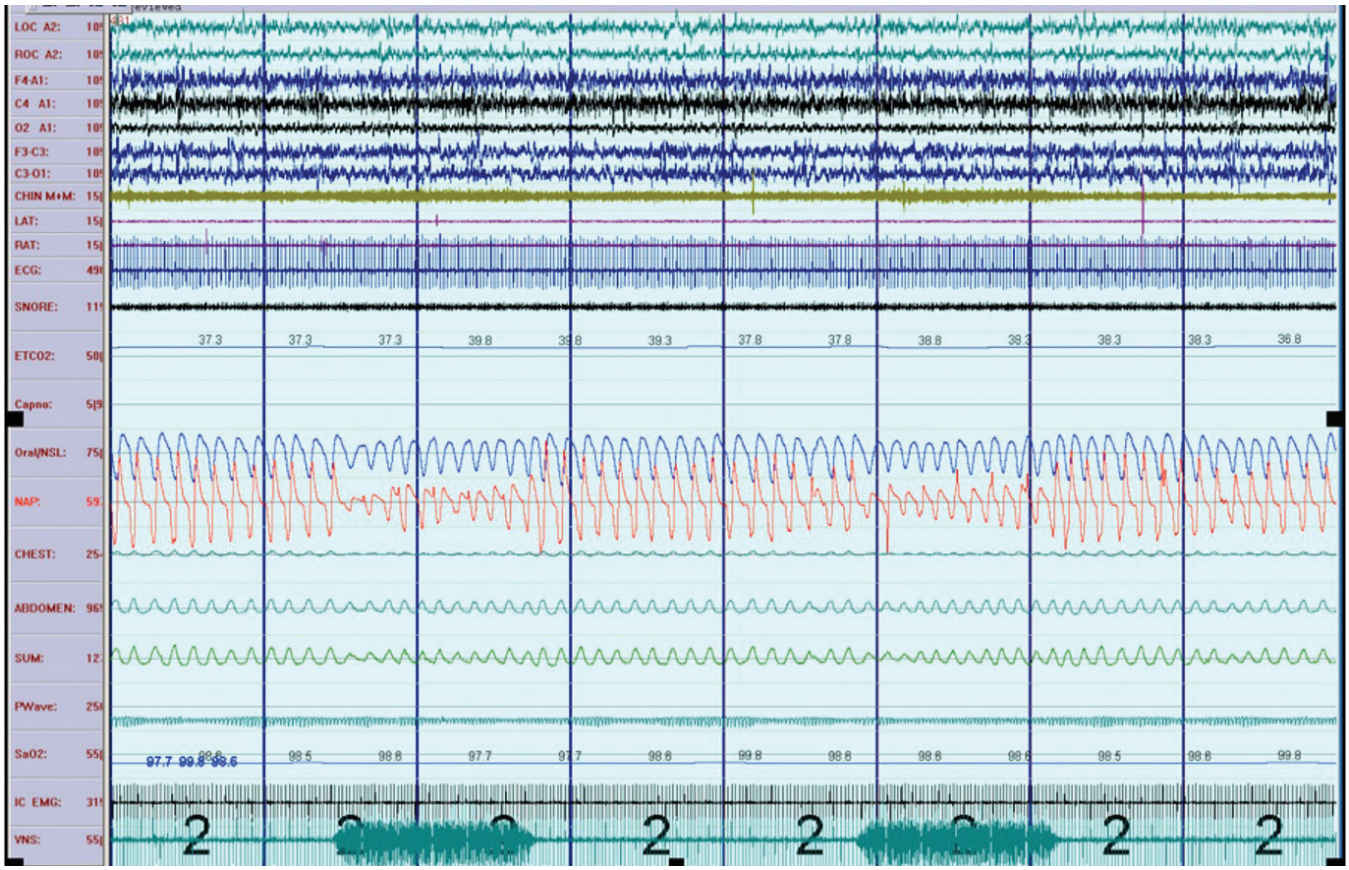

Figure 1.

Of the following, which option represents the most appropriate management at this point?

A. Referral for dedicated nocturnal EEG
B. Referral to otolaryngology
C. Initiate CPAP therapy
D. Decrease VNS stimulation

34. Which of the following patients would be the most appropriate candidate for home sleep apnea testing involving the use of peripheral arterial tonometry?

A. A 35-year-old man with loud snoring and witnessed apneas; medical issues include mild persistent asthma, diabetes, and hypertension; BMI is 32 kg/m^2
B. A 65-year-old man with excessive daytime somnolence and snoring; medical issues include hypertension and benign prostate hypertrophy; medications are lisinopril, baby aspirin, and terazosin; BMI is 35 kg/m^2
C. A 75-year-old woman with excessive daytime somnolence, nocturia, and loud snoring; medical issues include diabetes, coronary artery disease with prior bypass graft surgery, heart failure with preserved ejection fraction, and peripheral vascular disease; BMI is 38 kg/m^2
D. A 28-year-old woman with loud snoring and excessive daytime somnolence; medical issues include hyperhidrosis with thoracic sympathectomy 6 months ago; BMI is 38 kg/m^2

35. A 55-year-old married man comes to sleep clinic. He reports jokingly that he is coming in because his wife has been nagging him about his snoring. She reports that he snores loudly but also has never seen him hold his breath during sleep. He has a BMI of 25.1 kg/m^2 and is taking no medications. He has been in excellent health, walks daily, plays golf, and has had no recent hospitalizations. His BP is 118/78 mm Hg. He sleeps well at night with nocturia once each night. His Epworth Sleepiness Scale score is 4/24.

He read online that if one tapes the mouth shut at bedtime, one will snore less; he explains that he has been doing this for the last 3 weeks to good effect, insofar as his wife's complaints are concerned. A home sleep apnea test (HSAT), using peripheral arterial tonometry, is performed. He shows an apnea-hypopnea index of 1.7 events/h and no drops in saturation, despite sleeping supine the entire night and having 45 min of REM sleep. When he is seen back in clinic to review these results, the patient reports that he felt that he slept well on the HSAT night and, as usual, he taped his mouth shut and that his wife said that he did not snore on that night.

Which of the following is the most correct statement?

A. The patient should be referred for drug-induced sleep endoscopy.
B. Peripheral arterial tonometry will not be accurate in this context.
C. Taping his mouth likely increased the muscle tone in his upper airway.
D. Taping his mouth shut can exacerbate sleep-disordered breathing.

36. A 19-year-old man with traumatic brain injury (TBI) after a sporting accident is referred for evaluation of chronic sleep fragmentation and daytime sleepiness. After the accident, he reports a poor academic performance related to problems with concentration that have persisted for the last 6 months. He denies any sleep-related complaints before the trauma. He is now living with his girlfriend, who says that he does not snore. He takes no medications. The patient's physical examination findings are within normal limits, with a Mallampati class II, a neck size of 36 cm, a BMI of 24 kg/m^2, and normal cranial nerve examination findings. His Epworth Sleepiness Scale score is 16/24.

Workup for hypersomnia, including polysomnography (PSG) and a multiple sleep latency test (MSLT), shows the following results in Figures 1 and 2. Additionally, the actigram seen in Figure 3 was obtained before the PSG and MSLT.

PSG				
	Total sleep time (hours)	7:15	AHI (per hour)	3
	Sleep latency (min.)	9	Respiratory effort–related arousals (per hour)	4
	Sleep efficiency (%)	85	Periodic limb movements (per hour)	8
	REM sleep (%)	12	Oxygen (mean)	94%
	REM latency (min.)	14		

Figure 1.

MSLT	NAP #	Sleep observed	Sleep latency (min.)	REM Observed	REM Latency (min.)
	1	No	-	No	-
	2	Yes	4	1	4.5
	3	Yes	4	No	-
	4	Yes	6	No	-
	5	Yes	4	No	-

Figure 2.

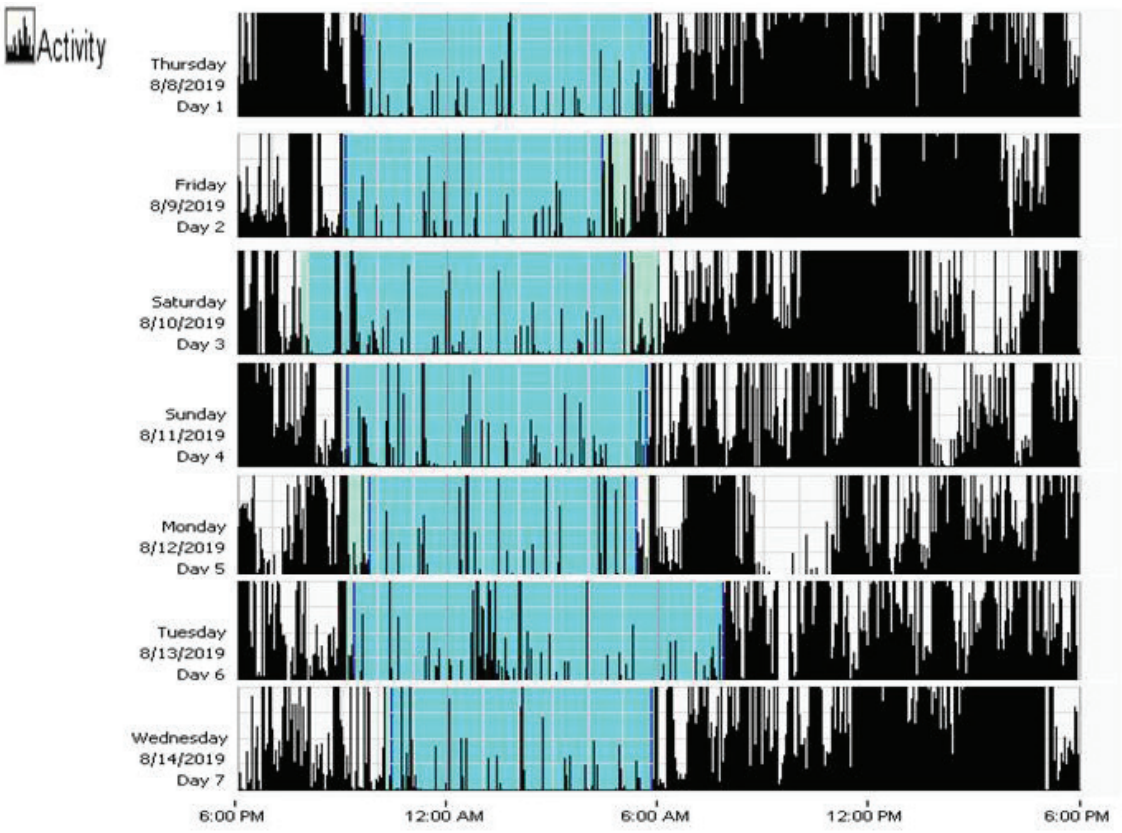

Figure 3.

Which of the following is the most likely diagnosis according to the test results?

A. Idiopathic hypersomnia
B. Insufficient sleep syndrome
C. Narcolepsy type 2
D. Delayed sleep-wake phase disorder

37. A 23-year-old overweight man with moderate OSA on autotitrating CPAP, 5-15 cm H_2O, returns to the sleep clinic with complaints of difficulties falling asleep and daytime sleepiness since he started working as a fast-food restaurant supervisor. He works from 7:00 AM to 7:00 PM, 5 days per week. He goes to bed around 11:00 PM, and he reports using PAP therapy from the moment he falls asleep until his alarm goes off at 6:15 AM. He denies sleep fragmentation, breakthrough snoring, gasping, or choking while on PAP therapy. During his days off, he sleeps until 10:00 AM. The download report from his device is shown below.

Therapy
Median leak: 5.8 L/min (95th percentile, 22.3 L/min)
Events per hour: apnea-hypopnea index, 2.8/h (apnea index, 0.4/h; hypopnea index, 2.4/h)

Compliance Report
Usage days: 42/42 days (100%)
Usage >4 h: 41 days (99%)
Average usage (days used): 5 h 09 min