

Alabama & Mississippi Chapters 2024 Scientific Meeting



MKSAP RAPID FIRE

BOARD QUESTIONS

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Question 1

An 18-year-old man is evaluated for a 2-day history of a pruritic rash. He sits nightly in his hot tube. He has not had a rash like this before. Medical history is unremarkable and he takes no medications.

On physical examination, vital signs are normal. Several tender erythematous papulopustules are located primarily over his buttocks.

Which of the following is the most appropriate management for this patient?

- A. Cephalexin
- B. Ciprofloxacin
- C. Doxycycline
- D. Observation



Answers



Observation is appropriate at this time (Option D)

- Folliculitis results from inflammation of the hair follicles. It typically presents as perifollicular erythematous papules and pustules over the face, scalp, trunk, and thigh; however, it can appear over any hair-bearing area of skin.
- Bacterial cultures can be performed from pustules but are usually unnecessary. This patient most likely has *Pseudomonas aeruginosa* folliculitis, which is associated with the use of hot tubs, swimming pools, saunas, and whirlpools.
- It is typically self-limited, resolving within 7 to 10 days. Anyone exposed to water containing *P. aeruginosa* can develop this infection, particularly in areas where the skin is in contact with water for prolonged periods of time (i.e., under swimsuits). In addition to multiple erythematous pruritic papulopustular or nodular lesions, patients may also develop slight temperature elevations and malaise. Appropriate pH and chlorine disinfectant levels can decrease the risk for this infection. The incubation period is usually about 2 days.

Key Point

- “Hot tub” folliculitis is a self-limited skin infection associated with the use of hot tubs, swimming pools, saunas, and whirlpools containing *Pseudomonas aeruginosa*.

Citation:

Hlavsa MC, Cikesh BL, Roberts VA, et al. Outbreaks associated with treated recreational water - United States, 2000-2014. MMWR Morb Mortal Wkly Rep. 2018;67(19):547-551. PMID: 29771872 doi:10.15585/mmwr.mm6719a3

Question 2

A 25-year-old man is seen in follow-up examination for asthma diagnosed 2 months ago. He reports that his symptoms are now well controlled without use of his rescue inhaler, and results of the Asthma Control Test confirm well-controlled asthma. During the visit, he describes feeling down on many days, with difficulty falling asleep and early morning awakening. Depression screening with the Patient Health Questionnaire-2 is positive. Medications are beclomethasone, montelukast, and albuterol. On physical examination, vital signs and pulmonary examination are normal.

Which of the following is the most appropriate treatment?

- A. Begin escitalopram
- B. Begin salmeterol
- C. Stop beclomethasone, begin budesonide-formoterol
- D. Stop montelukast



Answers

Stop Montelukast (Option D)

- **Montelukast has been associated with significant adverse mental health effects** and may be the cause of the patient's depression. Depressive symptoms can occur in patients with and without a previous history of depression or other neuropsychiatric disorders. In March 2020 the FDA added a **black box warning** to montelukast, strengthening previous warnings about behavior and mood-related changes, including suicides, associated with this medication.
- After initiation of asthma therapies, patients should be reassessed for symptom control and medication tolerance. Controller medications such as salmeterol or budesonide-formoterol can be stepped up or down with the goal of maintaining symptom control and minimizing medication exposure.



Key Points

- After initiation of asthma therapies, patients should be reassessed for symptom control and medication tolerance.
- Montelukast should be discontinued in patients with symptoms suggestive of depression.

Question 3

A 55-year-old man is evaluated for slowly progressive changes in his left hand, as shown

Which of the following is the most likely diagnosis?

- A. De Quervain tendinopathy
- B. Dupuytren contracture
- C. Eosinophilic fasciitis
- D. Limited cutaneous systemic sclerosis



Answers



The most likely diagnosis is Dupuytren contracture (Option B)

- Dupuytren contracture is a fibrosing disorder of the palmar fascia resulting in finger flexion contracture that spares the thumb and index finger.
- Loss of full extension develops slowly over decades with finger flexion contractures. The earliest sign is “puckering” of the skin over the flexor tendon in the palm with minimal discomfort related to cord-like fibrosing tightness.
- Finger triggering may be present. Bilateral hand involvement is more common in patients with diabetes and poor glycemic control.
- The cause is unknown, but Dupuytren contracture is associated with occupations involving repetitive motion or vibration; conditions such as diabetes mellitus or complex regional pain syndrome; alcohol use disorder; and cigarette smoking.

Citation:

Question 4

A 42-year-old man is evaluated during a follow-up visit for a patent ductus arteriosus (PDA) identified early in life. He had regular follow-up visits through adolescence but has not had a medical evaluation recently. He is asymptomatic.

On physical examination, blood pressure is 120/70 mm Hg. Apical impulse is displaced laterally. A continuous murmur that envelops the S2 is heard beneath the left clavicle. The remainder of the cardiac examination is unremarkable.

Echocardiogram demonstrates a PDA with left-to-right shunt. The left atrium and left ventricle are moderately enlarged, and the left ventricular ejection fraction is 63%. The right heart chambers are normal in size. The estimated right ventricular systolic pressure is 30 mm Hg.

Which of the following is the most appropriate management?

- A. Cardiac MRI
- A. Indomethacin
- A. PDA device closure
- A. Serial echo monitoring



Answers

PDA Closure Device (Option C)

- A PDA is a persistent fetal connection between the aorta and the left pulmonary artery that leads to volume overload of the left-sided chambers. The typical murmur of a PDA is a continuous “machinery” murmur heard beneath the left clavicle.
- **Closure of the PDA is indicated in patients with left-sided cardiac chamber enlargement** even if asymptomatic. Percutaneous closure is usually performed; referral to a congenital cardiac center for consideration of closure options is recommended.
- PDA closure should be **avoided in patients with pulmonary hypertension**. In patients with pulmonary hypertension, the existence of right-to-left ductal shunting may be necessary to maintain cardiac output, and closure may result in clinical worsening.

Citation: Stout KK, Daniels CJ, Aboulhosn JA, et al. 2018 AHA/ACC guideline for the management of adults with congenital heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 2019;73:e81-e192. PMID: 30121239 doi:10.1016/j.jacc.2018.08.1029



Key Points

- The typical murmur of a patent ductus arteriosus is a continuous “machinery” murmur that envelops the S₂, making it inaudible; the murmur is heard beneath the left clavicle.
- Patent ductus arteriosus closure is indicated in patients with left-sided cardiac chamber enlargement even in the absence of symptoms, as long as pulmonary artery systolic pressure is less than 50% systemic.

Question 5

A 31-year-old woman is evaluated for several months of palpitations, fatigue, and presyncope. Symptoms are worse with upright posture; otherwise, there are no specific precipitating factors. She takes no medications.

On physical examination, blood pressure is 125/80 mm Hg while lying down and 118/76 while standing; pulse rate is 80/min while lying down and 130/min while standing. All other findings are normal.

Electrolyte, thyroid-stimulating hormone, and hemoglobin levels, as well as kidney and liver function, are normal. Results of a toxicology screen are negative.

ECG shows normal sinus rhythm.

Which of the following is the most likely diagnosis?

- A. Inappropriate sinus tachycardia
- B. Neurogenic orthostatic hypotension
- C. Postural orthostatic tachycardia syndrome
- D. Vasovagal syncope



Answers



The most likely diagnosis is postural orthostatic tachycardia syndrome (POTS) (Option C).

- POTS is a clinical syndrome characterized by orthostatic intolerance with a heart rate increase of 30/min or greater, often with a standing heart rate greater than 120/min within 10 minutes of standing or head-up tilt and in the absence of orthostatic hypotension.
- Although not fully understood, the causes are likely multifactorial and may include several different pathophysiologic mechanisms, including autonomic, adrenergic, or renin-angiotensin-aldosterone dysfunction, or autoimmune disorder.
- Patients may often have disparate comorbid symptoms such as ME/chronic fatigue, migraines, or gastrointestinal symptoms.
- Initial treatment includes nonpharmacologic measures such as ensuring adequate hydration, wearing compression garments, and sleeping with the head of the bed raised.
- Effectiveness of pharmacologic treatment for POTS is not well supported by clinical trials. Currently, no medication has been approved by the FDA for treating POTS, although sometimes providers prescribe medications off-label for severe symptoms refractory to nonpharmacologic treatment.
- This patient's increase in heart rate of 50/min without a significant drop in blood pressure is most consistent with POTS.

Key Point

- Postural orthostatic tachycardia syndrome is a form of dysautonomia characterized by orthostatic intolerance and excessive tachycardia, particularly with standing.

Citation:

Question 6

An 87-year-old woman is evaluated for a 1-year history of bothersome insomnia. She reports taking up to 2 hours to fall asleep. She also feels that her sleep is less refreshing. She wakes up early in the morning without setting an alarm and sometimes takes 20-minute naps during the day. She has no other sleep-related symptoms, no current mood concerns, and no history of depression. She is otherwise healthy.

Which of the following is the most appropriate treatment?

- A. Cognitive behavioral therapy for insomnia
- B. Diphenhydramine
- C. Gabapentin
- D. Melatonin
- E. Pramipexole




Answers



CBT for insomnia (Option A)

- **Cognitive behavioral therapy for insomnia (CBT-I)** is the best treatment option for this patient with problematic sleep-onset insomnia, characterized by difficulty falling asleep.
- Initial evaluation of insomnia should consist of a **thorough history and review of sleep hygiene**. An abbreviated version of CBT-I, brief behavioral treatment for insomnia (BBT-I), focuses on the behavioral components of sleep restriction, stimulus control, and sleep hygiene only.
- Diphenhydramine, benzodiazepines, and other sleep aids (e.g. zolpidem) can cause side effects in older patients and increase risk of falls. All of these medications are listed on the **2019 Beers Criteria** for Potentially Inappropriate Medication Use in Older Adults from the American Geriatrics Society.
- Studies on **Melatonin have shown very small effects** on sleep latency and total sleep time, with unclear clinical significance.

Key Point

-  Cognitive behavioral therapy for insomnia is first-line treatment in all adults with chronic insomnia, including the geriatric population.

Question 7

A 71-year-old man, a retired university professor, is evaluated for a 9-month history of difficult-to-manage behaviors and slow gait. He has exhibited intermittent forgetfulness and inattention, gotten lost while driving, and had visual hallucinations. Family members report that his affect has become blunted. He has no other medical problems.

Vital signs are normal. Examination reveals mild agitation, impaired recall and figure drawing, masked face, muscle rigidity, hand tremors, and a slow gait.

What is the most likely diagnosis?

- A. Alzheimer Disease
- B. Dementia with Lewy Bodies
- C. Frontotemporal Dementia
- D. Vascular cognitive impairment



Answers



This patient most likely has dementia with Lewy bodies (Option B), the second most common cause of degenerative dementia.

Diagnostic Features of Dementia with Lewy Bodies

Features	Specific Symptoms
Central feature	Dementia
Core features	Parkinsonism, fluctuations in attention, rapid eye movement sleep behavior disorder, and recurrent visual hallucinations
Supportive features	Severe neuroleptic sensitivity, transient episodes of loss of consciousness, significant daytime somnolence, severe delusions (especially early in dementia course), apathy, repeated falls, and orthostatic hypotension
Indicative biomarkers	Polysomnographic confirmation of REM sleep without atonia Reduced dopamine transporter uptake in basal ganglia evident on SPECT or PET scans

REM = rapid eye movement; SPECT = single photon emission CT.

Key Points

- Core features of dementia with Lewy bodies are parkinsonian motor features, visual hallucinations, and frequent fluctuations in attention; autonomic symptoms and REM sleep behavior disorder are common.
- When dementia occurs well after the motor symptoms, it is considered Parkinson disease dementia but when dementia and motor symptoms develop within 1 to 2 years of each other, it is classified as dementia with Lewy bodies.

Citation:

Question 8

A 24-year-old man is evaluated during a routine health examination. He received the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine and one dose of the quadrivalent meningococcal conjugate vaccine when he was 18 years old, before starting college. He received the influenza and COVID-19 vaccines during the most recent influenza season and has additionally completed the hepatitis B vaccine series. He has not received the human papillomavirus vaccine series. He does not smoke cigarettes.

Which of the following is the most appropriate vaccination strategy for this patient?

- A. Administer a second dose of quadrivalent meningococcal conjugate vaccine
- B. Administer the human papillomavirus vaccine series
- C. Administer the 23-valent pneumococcal polysaccharide vaccine
- D. No vaccines are indicated at this time



Answers

Administer the human papillomavirus vaccine series (Option B)



- HPV vaccination prevents chronic persistent HPV infection, which **can lead to cervical, anogenital, and nasopharyngeal cancers**. The vaccine is offered starting at age 11, and is given in a 3-dose-series for adults. A history of HPV infection or an abnormal Pap smear does not change the recommendation for vaccination.
- HPV vaccine is approved up to age 45
- Recent studies have shown **>50% reduction in head and neck cancer in men**
- Pneumococcal vaccination (Option C) is indicated > 65 years or with risk factors. The **CDC PneumoRecs app** can help screen patients.

Key Points

- Individuals aged 11 to 26 years should receive human papillomavirus vaccination, ideally administered between age 11 and 12 years or between age 13 and 26 years if not given previously.
- A history of human papillomavirus infection or an abnormal Pap smear does not change the recommendation for human papillomavirus vaccination.

Citation: Murthy N, Wodi AP, Cineas S, et al; Advisory Committee on Immunization Practices.

Recommended adult immunization schedule, United States, 2023. Ann Intern Med. 2023. PMID: 36757885

Question 9

A 38-year-old woman is evaluated after a recent diagnosis of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) also known as Systemic Exertion Intolerance Disease (SEID).

She fulfilled the diagnostic criteria of fatigue of at least 6 months duration with substantial reduction in pre-illness activities, post-exertional malaise, unrefreshing sleep, and cognitive impairment.

She reports no pain, depressed mood, anhedonia, snoring, or daytime hypersomnolence.

Medical history is significant for migraine and irritable bowel syndrome with predominant diarrhea. Medications are sumatriptan, topiramate, loperamide, and nortriptyline.

Which of the following is the most appropriate management?

- A. Pacing strategies
- B. Modafinil
- C. Pregablin
- D. Sertaline



Answers

Use of pacing strategies (Option A) is the most appropriate treatment for this patient with symptoms consistent with myalgic encephalomyelitis/chronic fatigue syndrome.

- ME/CFS diagnosis is based on criteria from the Institute of Medicine, requires the presence of fatigue of at least 6 months' duration with substantial reduction in pre-illness activities, post-exertional malaise, unrefreshing sleep, and either cognitive impairment or orthostatic intolerance.
- Pathophysiology of ME/CFS is often triggered by a prodromal event, such as an infection or immunological triggers like vaccines. Autoimmunity, immune dysfunction cause reactivation of latent viruses, and mitochondrial dysfunction are some organic pathogenic mechanisms of ME/CFS
- Currently there is no cure for this condition due to underfunded research. Thus, management is supportive and focuses on treatment of symptoms.
- Pacing strategies, in which specific limits are placed on the degree of exertion, are used to reduce the frequency of post-exertional malaise.
- Graded Exercise Therapy (GET) recommendation was removed by the 2021 NICE Guidelines update because of high rates of harm.

Citation:

Bateman L, Bsted AC, Bonilla HF, et al. Myalgic encephalomyelitis/chronic fatigue syndrome: essentials of diagnosis and management. Mayo Clin Proc. 2021;96:2861-2878. [PMID: 34454716](https://pubmed.ncbi.nlm.nih.gov/34454716/) doi:10.1016/j.mayocp.2021.07.004



Key Point

- The treatment of systemic exertion intolerance disease is supportive, focuses on treatment of symptoms and comorbid conditions, and includes nonpharmacologic strategies, such as pacing.

Thank you



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