American Board of Family Medicine

IN-TRAINING EXAMINATION

TIME–4 HOURS

1. A 4-week-old white male is brought to your office with a 2-week history of increasing dyspnea, cough, and poor feeding. The child appears nontoxic and is afebrile. On examination you note conjunctivitis, and a chest examination reveals tachypnea and crackles. A chest film shows hyperinflation and diffuse interstitial infiltrates and a WBC count reveals eosinophilia.

   What is the most likely etiologic agent?

   A) Staphylococcus species
   B) Chlamydia trachomatis
   C) Respiratory syncytial virus
   D) Parainfluenza virus

2. A 36-year-old obese female presents to your office with a chief complaint of amenorrhea. On examination you note hirsutism and body acne. She is on no medications and a pregnancy test is negative. Serum testosterone is at the upper limits of normal and TSH is within normal limits.

   In addition to weight loss and exercise, which one of the following would be the most appropriate initial management?

   A) High-dose combined oral contraceptives
   B) Progestin-only contraceptives
   C) Metformin (Glucophage)
   D) Levothyroxine (Synthroid)

3. A factory worker sustains a forced flexion injury of the distal interphalangeal (DIP) joint, resulting in a small bone fragment at the dorsal surface of the proximal distal phalanx (mallet fracture). Which one of the following is the most appropriate management strategy?

   A) Buddy taping and early range of motion
   B) Splinting the DIP joint in extension
   C) Splinting the DIP joint in flexion
   D) Referral for surgical repair

4. Which one of the following drugs is NOT effective for maintenance therapy in bipolar disorders?

   A) Haloperidol
   B) Lamotrigine (Lamictal)
   C) Lithium
   D) Quetiapine (Seroquel)
   E) Valproate sodium (Depacon)

5. A 30-year-old ill-appearing male presents with right hand and arm pain and a rapidly expanding area of redness. On examination he has a temperature of 38.9°C (102.0°F), a pulse rate of 120 beats/min, and a blood pressure of 116/74 mm Hg. He also has erythema from the dorsal hand to the elbow, violaceous bullae on the dorsal hand and wrist, and severe pain with dorsiflexion of the wrist or fingers.

   Which one of the following is the most appropriate initial step in the management of this patient?

   A) Oral dicloxacillin and outpatient follow-up within the next 24 hours
   B) Intravenous metronidazole
   C) Consultation with an infectious disease specialist for antibiotic management
   D) Immediate surgical consultation for operative debridement
   E) Incision and drainage with wound cultures in the emergency department

6. Patients being treated with amiodarone (Cordarone) should be monitored periodically with serum levels of

   A) cortisol
   B) creatine phosphokinase
   C) creatinine
   D) LDH
   E) TSH

7. A mother brings her 2-year-old daughter to your office because the child is not using her left arm. Earlier in the day the mother left the toddler under the supervision of her 12-year-old sister while she went to the store. When she returned the toddler was playing with toys using only her right arm, and was holding the left arm slightly pronated, flexed, and close to her body. The older daughter was unaware of any injury to the girl's arm, and the child does not seem distressed or traumatized.

   Physical examination of the child's clavicle, shoulder, wrist, and hand do not elicit any signs of pain or change in function. She does seem to have some tenderness near the lateral elbow and resists your attempts to examine that area. There is no ecchymosis, swelling, or deformity of the elbow.

   Which one of the following would be most appropriate at this point?

   A) Plain radiographs of the affected elbow
   B) Ultrasonography of the affected elbow
   C) Evaluation by an orthopedic surgeon within 24 hours
   D) Attempted reduction of the subluxed radial head
   E) Placement in a splint and follow-up in the office if there is no improvement in the next 1–2 weeks

8. A 12-year-old male uses a short-acting bronchodilator three times per week to control his asthma. Lately he has been waking up about twice a week because of his symptoms.

   Which one of the following medications would be most appropriate?

   A) Inhaled medium-dose corticosteroids
   B) A scheduled short-acting bronchodilator
   C) A scheduled long-acting bronchodilator
   D) A leukotriene inhibitor

9. Which one of the following is the most appropriate first-line therapy for primary dysmenorrhea?

   A) Combined monophasic oral contraceptives
   B) Combined multiphasic oral contraceptives
   C) Subdermal etonogestrel (Nexplanon)
   D) Intramuscular medroxyprogesterone (Depo-Provera)
   E) NSAIDs

10. While performing a routine physical examination on a 42-year-old female you discover an apparent nodule in the left lobe of the thyroid measuring approximately 1 cm in diameter, which is confirmed on ultrasonography. The most appropriate next step in the evaluation of this finding is a

    A) serum calcitonin level
    B) serum free T_3 level
    C) serum TSH level
    D) serum thyroglobulin level
    E) radionuclide thyroid scan

11. Which one of the following medications should be started at a low dosage and titrated slowly to minimize the risk of Stevens-Johnson syndrome?

    A) Carbamazepine (Tegretol)
    B) Divalproex (Depakote)
    C) Lamotrigine (Lamictal)
    D) Lithium
    E) Ziprasidone (Geodon)

12. You are the medical director of a long-term-care facility that has 60 residents. Several patients experience fever, cough, and upper respiratory symptoms. Two of these patients test positive for influenza A (H1N1) virus.

    Which one of the following is recommended by the Centers for Disease Control and Prevention (CDC) for this situation?

    A) Chemoprophylaxis with appropriate medications for all residents
    B) Treatment initiated on an individual basis once testing confirms that a resident has influenza
    C) Prophylaxis only for staff who have had direct patient contact with a resident with laboratory-confirmed infection
    D) No chemoprophylaxis for staff or residents who have been appropriately vaccinated

13. Information derived from which one of the following provides the best evidence when selecting a specific treatment plan for a patient?

    A) Meta-analyses
    B) Prospective cohort studies
    C) Expert opinion
    D) Consensus guidelines

14. Examination of a 2-day-old infant reveals flesh-colored papules with an erythematous base located on the face and trunk, containing eosinophils. Which one of the following would be most appropriate at this time?

    A) An allergy evaluation
    B) Low-dose antihistamines
    C) Hydrocortisone cream 0.5%
    D) A sepsis workup
    E) Observation only

15. American Urological Association guidelines define asymptomatic microscopic hematuria as which one of the following in the absence of an obvious benign cause?

    A) ≥1 RBCs/hpf
    B) ≥3 RBCs/hpf
    C) ≥10 RBCs/hpf
    D) A positive dipstick reading for blood

16. A 70-year-old male with widespread metastatic prostate cancer is being cared for through a local hospice. Surgery, radiation, and hormonal therapy have failed to stop the cancer, and the goal of his care is now symptom relief. Over the past few days he has been experiencing respiratory distress. His oxygen saturation is 94% on room air and his lungs are clear to auscultation. His respiratory rate is 16/min.

    Which one of the following would be best at this point?

    A) Morphine
    B) Oxygen
    C) Albuterol (Proventil, Ventolin)
    D) Haloperidol

17. A 30-year-old female with a history of prolonged QT syndrome presents with severe acute bacterial sinusitis. Which one of the following antibiotics should be avoided?

    A) Amoxicillin
    B) Clarithromycin (Biaxin)
    C) Amoxicillin/clavulanate (Augmentin)
    D) Moxifloxacin (Avelox)
    E) Cefuroxime (Ceftin)

18. Which one of the following is associated with treatment of COPD with inhaled corticosteroids?

    A) An increased risk of monilial vaginitis
    B) An increased risk of bruising
    C) Consistent improvement in FEV_1
    D) A decreased risk of pneumonia
    E) Decreased mortality

19. A 56-year-old male complains of daily early awakening and low energy for the past 3 weeks. Six weeks ago he had a myocardial infarction treated with a coronary artery stent. During that hospitalization his CBC, fasting glucose level, and thyroid function were normal. A recent phone note from the cardiac rehabilitation nurse indicates that he became apathetic and stopped attending his rehabilitation sessions. He admits to a feeling of hopelessness. He denies chest pain, dyspnea, orthopnea, and palpitations. His vital signs and physical examination are remarkable for a healing radial artery catheterization wound.

    In addition to resumption of cardiac rehabilitation, which one of the following would be most appropriate at this point?

    A) Reassurance and a follow-up appointment in 6 weeks
    B) A Patient Health Questionnaire 9 (PHQ-9)
    C) Polysomnography
    D) A BNP level
    E) An exercise thallium stress test

20. A 5-year-old white male is brought to your office with a chief complaint of chronic nocturnal limb pain. His mother states that his pain is often severe enough that it awakens him at night and she often gives him ibuprofen to help alleviate his calf pain, but she has never seen him limp or heard him complain of pain during the day. She also has not noticed any grossly swollen joints, fever, rash, or weight change. She is concerned because of a family history of juvenile rheumatoid arthritis in a distant cousin. The physical examination is within normal limits, as are a CBC and an erythrocyte sedimentation rate.

    Which one of the following would be most appropriate at this point?

    A) Bilateral plain radiographs of the lower extremities
    B) Testing for antinuclear antibody
    C) Testing for rheumatoid factor
    D) Referral to orthopedic surgery
    E) No further workup

21. According to the guidelines developed by the JNC 8 panel, which one of the following should NOT be used as a first-line treatment for hypertension?

    A) ACE inhibitors
    B) Angiotensin receptor blockers
    C) Calcium channel blockers
    D) β-Blockers
    E) Thiazide-type diuretics

22. A 67-year-old male presents with a 10-day history of bilateral shoulder pain and stiffness accompanied by upper arm tenderness. On examination there is soreness about both shoulders and the patient has great difficulty raising his arms above his shoulders. There is no visual disturbance, and no tenderness over the temporal arteries. C-reactive protein is elevated and the erythrocyte sedimentation rate is 65 mm/hr (N 0–17).

    Which one of the following would help to confirm the most likely diagnosis?

    A) The use of published validated diagnostic criteria
    B) Synovitis of the glenohumeral joint on ultrasonography
    C) A response to treatment with prednisone
    D) A response to NSAIDs
    E) A lack of systemic symptoms

23. A 70-year-old male with hypertension, benign prostatic hyperplasia, depression, and well-controlled diabetes mellitus sees you because of increasing fatigue. His medical history also includes stent placement for coronary artery disease. A physical examination is unremarkable except for decreased peripheral pulses. A CBC, basic metabolic profile, hemoglobin A_{1c} level, free T_4 level, and TSH level are all normal, except for a serum sodium level of 125 mEq/L (N 135–145). His serum osmolality is 268 mOsm/kg (N 275–290). His urine sodium level is 50 mEq/L (N <20) and his urine osmolality is 300 mOsm/kg.

Which one of the patient's medications is most likely to cause this problem?

A) Losartan (Cozaar)
B) Tamsulosin (Flomax)
C) Metformin (Glucophage)
D) Atorvastatin (Lipitor)
E) Sertraline (Zoloft)

24. A 21-year old female comes to her family physician's office with an unintended pregnancy and states that she wishes to have a medical abortion. Elective abortion is against the physician's personally held moral principles.

According to the American Academy of Family Physicians, which one of the following would be the most appropriate course of action for the physician in this situation?

A) Explaining the rationale for morally opposing medical abortions
B) Providing no further assistance at this visit
C) Offering to match the patient with prospective adoptive parents
D) Advising the patient that it would be safer for her to continue the pregnancy
E) Providing resources that explain how to access a safe and legal medical abortion

25. A 65-year-old male presents to an urgent care center with a foot ulcer. His past medical history is significant for hypertension, COPD, and diabetes mellitus. He has been hospitalized several times in the past year for COPD exacerbations and a hip fracture. He does not have any other current problems.

On examination he has a temperature of 37.3°C (99.1°F), a pulse rate of 105 beats/min, a respiratory rate of 16/min, and a blood pressure of 142/83 mm Hg. His examination is unremarkable except for a 2-cm ulcer on the ball of his left foot that has 3 cm of surrounding erythema and some purulent drainage. His CBC is normal except for a WBC count of 14,300/mm^3 (N 4300–10,800).

Which one of the following would be the most appropriate choice for initial treatment?

A) Amoxicillin/clavulanate (Augmentin)
B) Linezolid (Zyvox)
C) Ciprofloxacin (Cipro)
D) Ceftriaxone (Rocephin) and levofloxacin (Levaquin)
E) Piperacillin/tazobactam (Zosyn) and vancomycin (Vancocin)

26. Which one of the following is the most common cause of unintentional deaths in children?

A) Motor vehicle accidents
B) Drowning
C) Poisoning
D) Fires
E) Falls

27. A 45-year-old male presents with shortness of breath and a cough. On pulmonary function testing his FVC is $<80\%$ of predicted, his FEV_1/FVC is 90% of predicted, and there is no improvement with bronchodilator use. The diffusing capacity of the lung for carbon monoxide (DLCO) is also low.

Based on these results, which one of the following is most likely to be the cause of this patient's problem?

A) Asthma
B) Bronchiectasis
C) COPD
D) Cystic fibrosis
E) Idiopathic pulmonary fibrosis

28. A 45-year-old male presents to the emergency department with a complaint of acute, sharp chest pain relieved only by leaning forward. On examination you hear a pericardial friction rub. An EKG shows diffuse ST elevations. Echocardiography reveals a small pericardial effusion.

Which one of the following is the most appropriate initial treatment?

A) β-Blockers
B) Nitrates
C) Glucocorticoids
D) NSAIDs

29. A 4-year-old male has a BMI of 17.5 kg/m^2, which places him between the 90th and 95th percentiles for BMI. According to the CDC, he should be classified as being

A) at a healthy weight
B) overweight
C) obese
D) morbidly obese

30. A 13-year-old female is being evaluated for primary amenorrhea. On examination she has short stature, a webbed neck, and a low hairline. A physical examination reveals no signs of pubertal development.

Which one of the following is most likely to provide a diagnosis?

A) MRI of the pituitary
B) FSH and LH levels
C) A prolactin level
D) Pelvic ultrasonography
E) Karyotyping

31. A 71-year-old female comes in for follow-up of hypertension. She is worried about her heart and says that some of her friends have had stress tests and she would like to get one as well just to be on the safe side. She has no chest pain, shortness of breath, or exercise intolerance, and a complete review of systems is negative.

The patient's current medications include lisinopril (Prinivil, Zestril), 20 mg daily; metoprolol succinate (Toprol-XL), 25 mg daily; and omeprazole (Prilosec), 20 mg daily. Her past medical history includes hypertension, obesity, and gastroesophageal reflux disease. A physical examination reveals a blood pressure of 130/70 mm Hg, a heart rate of 90/min, and a BMI of 31.2 kg/m^2. An EKG 2 years ago was normal.

Which one of the following should be ordered to assess this patient's cardiovascular risk?

A) A lipid profile
B) A coronary artery calcification score
C) A C-reactive protein level
D) An EKG
E) An exercise stress test

32. Which one of the following is true regarding respiratory syncytial virus (RSV) infection?

A) Most infections in the United States occur between August and December
B) Corticosteroids should be a routine part of treatment
C) The diagnosis is usually based on positive serology
D) It is rarely associated with bacterial co-infection

33. An 80-year-old female is seen for progressive weakness over the past 8 weeks. She says she now has difficulty with normal activities such as getting out of a chair and brushing her teeth. Her medical problems include hypertension, diabetes mellitus, and hyperlipidemia. Her medications include glipizide (Glucotrol), simvastatin (Zocor), and lisinopril (Prinivil, Zestril). Findings on examination are within normal limits except for diffuse proximal muscle weakness and normal deep tendon reflexes. A CBC, urinalysis, erythrocyte sedimentation rate, TSH level, and serum electrolyte levels are normal. Her blood glucose level is 155 mg/dL and her creatine kinase level is 1200 U/L (N 40–150).

Which one of the following is the most likely diagnosis?

A) Statin-induced myopathy
B) Polymyalgia rheumatica
C) Guillain-Barré syndrome
D) Diabetic ketoacidosis

34. A 3-year-old female is brought to your office with coughing and a tactile fever. Her only other symptom is mild rhinorrhea. She has a temperature of 38.2°C (100.8°F) and is mildly tachypneic. Her vital signs are otherwise normal and she appears to be well and in no respiratory distress. Her examination is unremarkable except for decreased breath sounds and crackles in the right lower lung field. She has no allergies to medications.

Which one of the following would be the most appropriate treatment?

A) Amoxicillin
B) Azithromycin (Zithromax)
C) Cefdinir
D) Moxifloxacin (Avelox)
E) Ceftriaxone (Rocephin)

35. When compared to a figure-of-eight dressing, which one of the following modalities of treatment has been shown to have similar fracture-healing outcomes and increased patient satisfaction for nondisplaced mid-shaft clavicular fractures?

A) A shoulder sling
B) A short arm cast
C) A long arm cast
D) Operative fixation

36. The mother of a 6-year-old male is concerned about his snoring, and she recently observed him stop breathing for a few seconds while he was sleeping. He has also been more sleepy during the day recently. His height and weight are normal. Polysomnography confirms obstructive sleep apnea.

Which one of the following would be the most appropriate primary treatment?

A) Methylphenidate (Ritalin)
B) Lorazepam (Ativan)
C) Fluoxetine (Prozac) on a daily basis
D) A mouthguard
E) Adenotonsillectomy

37. A 70-year-old male sees you for a routine annual evaluation. He complains of fatigue but has no other symptoms. He has a history of hypertension but has not fully adhered to his drug regimen, which includes hydrochlorothiazide, amlodipine (Norvasc), and lisinopril (Prinivil, Zestril).

Laboratory Findings

Hemoglobin	9.0 g/dL (N 13.5–17.2)
Serum creatinine	2.2 mg/dL (N 0.6–1.2)
Glomerular filtration rate	26 mL/min/1.73 m^2
Serum iron	30 µg/dL (N 60–170)
Total iron binding capacity	300 µg/dL (N 240–450)
Ferritin	55 ng/mL (N 46–100)
Mean corpuscular volume	77 μm^3 (N 80–100)

One year ago the patient had a serum creatinine level of 2.0 mg/dL. A colonoscopy 6 months ago was unremarkable and a stool test for occult blood is negative.

Which one of the following would be most appropriate at this point?

A) An erythropoietin level
B) Transfusion of packed RBCs
C) Epoetin alfa (Procrit)
D) Ferrous sulfate orally
E) Intravenous iron therapy

38. Which one of the following is most likely to be seen with diastolic dysfunction?

A) A dilated left ventricle
B) A preserved ejection fraction
C) Aortic insufficiency
D) Pericardial effusion

39. Slipped capital femoral epiphysis is most likely in which one of the following patients with no history of trauma?

A) A 3-day-old male with a subluxable hip
B) A 7-year-old male with groin pain and a limp
C) A 13-year-old male with knee pain
D) A 16-year-old female with lateral thigh numbness

40. A 43-year-old female smoker has type 2 diabetes mellitus, morbid obesity, and a recent diagnosis of symptomatic peripheral arterial disease. You have started her on atorvastatin (Lipitor), offered a supervised exercise program, and discussed smoking cessation and interventions.

Which one of the following should be recommended to prevent cardiovascular events in this patient?

A) Aspirin
B) Cilostazol (Pletal)
C) Enoxaparin (Lovenox)
D) Pentoxifylline
E) Warfarin (Coumadin)

41. A 56-year-old female comes in for evaluation of gradually worsening right hip pain. She describes her pain as located in the groin and dull in nature, and with activity often notes a clicking sensation associated with sharp pain. On examination her hip range of motion is intact but pain is elicited with extremes of internal and external rotation and her groin pain is exacerbated with the FABER test (knee flexion, abduction and external rotation of the leg until the ankle rests proximal to the contralateral knee) and FADIR test (knee flexion, adduction, and internal rotation of the leg).

Which one of the following is the most likely diagnosis?

A) Femoral neck fracture
B) Femoral hernia
C) Trochanteric bursitis
D) Hip labral tear

42. A doctor and patient are discussing using a particular drug to treat the patient's uncontrolled hypertension. Which one of the following potential effects of the drug is a patient-oriented outcome that should be discussed during shared decision-making?

A) A decrease in diastolic blood pressure
B) A decrease in hemoglobin A_{1c}
C) A decrease in carotid intimal thickness
D) A decrease in all-cause mortality
E) Improvement in the Framingham cardiac risk score

43. A 12-month-old male is brought to your office for a routine well child visit. His father has epilepsy and takes seizure medication.

Which one of the following vaccines will slightly increase the child's risk of a febrile seizure for up to 2 weeks after administration?

A) Hepatitis B
B) MMR
C) HiB
D) Pneumococcal
E) Polio

44. A right-hand–dominant 38-year-old male comes to your office because of right elbow pain. He recently began participating in a highly competitive adult volleyball league, and 2 weeks after he first began playing he developed mild pain in the medial elbow of his right arm. While completing an overhead serve last night he felt an acute worsening of the elbow pain. After the match he noted bruising over his medial elbow.

When you examine him you find bruising and pain to palpation around the medial elbow. With his shoulder in 90° of abduction and external rotation you rapidly flex and extend the elbow while maintaining valgus torque on the elbow (the moving valgus stress test). The patient reports pain between 70° and 120° of flexion.

This clinical presentation is most consistent with which one of the following causes of elbow pain?

A) Medial epicondylitis
B) Biceps tendinopathy
C) Cubital tunnel syndrome
D) Ulnar collateral ligament injury
E) Triceps tendinopathy

45. Which one of the following is true regarding the live attenuated intranasal influenza vaccine?

A) It is preferred in all children >6 months of age
B) It is more effective in children age 2–6 years than the inactivated vaccine
C) It is more effective in children >6 years of age than in younger children
D) It is the vaccine of choice for pregnant women
E) It is less effective in adults age 18–49 than the inactivated vaccine

46. A 63-year-old female with corticosteroid-dependent COPD has developed pneumonia. Which one of the following pathogens should the antibiotic regimen cover in this patient that would be unlikely in someone with pneumonia and otherwise healthy lungs?

A) Streptococcus pneumoniae
B) Mycoplasma pneumoniae
C) Haemophilus influenzae
D) Staphylococcus aureus
E) Pseudomonas aeruginosa

47. A 30-year-old male presents to your office because he thinks he may be suffering from alcohol withdrawal. He was dependent on alcohol for at least 10 years and has completed treatment programs twice. He had been abstinent for over a year until he began drinking heavily after his wife filed for divorce 2 weeks ago. A friend found him in a bar last night and has kept him from consuming alcohol for the past 12 hours.

The patient is now nauseated, miserable, restless, shaky, and sweating, and says he can feel his heart pounding. He has not had any seizures or episodes of delirium tremens. His temperature is 37.5°C (99.6°F), pulse rate 100 beats/min, and blood pressure 150/92 mm Hg. His palms are moist and he has a mild tremor on arm extension. He is oriented but cannot perform serial additions. A CBC, basic metabolic panel, and urine drug screen are normal.

You decide that outpatient treatment would be appropriate. Which one of the following alcohol withdrawal management options is supported by the best evidence?

A) Thiamine and magnesium
B) Carbamazepine (Tegretol)
C) Phenytoin (Dilantin)
D) Chlordiazepoxide
E) Clonidine (Catapres)

48. In the United States, cow's milk is not recommended for children until the age of

A) 4 months
B) 6 months
C) 9 months
D) 12 months
E) 15 months

49. A 15-year-old male presents to the emergency department after suffering a lateral dislocation of his patella. Which one of the following would be the best method for reducing this dislocation?

A) Medially directed pressure on the patella while extending the leg
B) Medially directed pressure on the patella while flexing the leg
C) Rapid leg extension
D) Lateral retinacular release

50. In a 15-year-old female with no known chronic medical conditions, which one of the following is essential before initiating oral combined hormonal contraception?

A) Bimanual pelvic examination
B) Clinical breast examination
C) Cervical cytology and HPV screening
D) Blood pressure measurement
E) Weight measurement

51. A 68-year-old male with end-stage lung cancer is being treated for pain secondary to multiple visceral and skeletal metastases. He has been on oral ibuprofen and parenteral morphine. However, over the past few weeks he reports progressive worsening of his pain. In order to achieve better pain control his morphine dosage has been continuously titrated up. In spite of this increase he continues to report severe pain that is now diffuse and occurs even when his caregivers touch him.

Which one of the following would be most appropriate at this time?

A) Increase the morphine dosage until continuous sedation is obtained
B) Attempt a reduction in the morphine dosage
C) Add an anxiolytic to help relieve anxiety
D) Advise the family that nothing more can be done for his pain

52. A 42-year-old male with a 4-year history of multiple sclerosis (MS) presents with an acute attack manifested by ataxia, incoordination, and dysarthria. Which one of the following is indicated for managing this flare-up of his MS?

A) Fingolimod (Gilenya)
B) Glatiramer (Copaxone)
C) Interferon-β (Avonex, Betaseron)
D) Methylprednisolone (Medrol)
E) Pramipexole (Mirapex)

53. A 24-year-old female presents to the emergency department because she thinks she is having an allergic reaction to her medication for depression. About 3 hours after taking her first dose of citalopram (Celexa) she noted extreme anxiety, agitation, palpitations, and a dry mouth. On examination she has a blood pressure of 180/110 mm Hg, a pulse rate of 120 beats/min, a respiratory rate of 24/min, and a temperature of 37.2°C (99.0°F). Her pupils are dilated and she has slow, continuous horizontal eye movements. Marked hyperreflexia is noted in the lower extremities.

In addition to supportive care, the patient should be given intravenous

A) propranolol
B) diphenhydramine
C) haloperidol lactate (Haldol Lactate)
D) flumazenil (Romazicon)
E) diazepam

54. In a patient with sepsis, which one of the following would confirm a diagnosis of septic shock?

A) A 1.0 mg/dL increase in the creatinine level
B) A platelet count of 20,000/mm^3 (N 150,000–350,000)
C) A WBC count of 25,000/mm^3 (N 4300–10,800)
D) A serum bilirubin level of 7.0 mg/dL (N <1.0)
E) A serum lactate level of 2.0 mmol/L (N 0.5–1.0)

55. A study finds that the positive predictive value of a new test for breast cancer is 75%, which means that

A) among patients with known breast cancer who had the test, 75% had a positive test
B) among patients with no breast cancer who had the test, 75% had a negative test
C) 75% of patients who tested positive actually had breast cancer
D) 75% of patients who tested negative did not have breast cancer

56. A 49-year-old male brings you a copy of his laboratory results obtained during an insurance examination. The patient says he feels fine, but his bilirubin level was 2.5 mg/dL (N <1.0). He says he averages 5 alcoholic beverages per week and takes no medications other than occasional ibuprofen. On examination he is not jaundiced and has no scleral icterus, and the remainder of the examination is within normal limits, including palpation of the liver and spleen. Laboratory testing reveals a normal CBC, normal liver enzyme levels, and normal serum haptoglobin. Bilirubin fractionation reveals an indirect level of 2.0 mg/dL and a direct level of 0.5 mg/dL (N <0.4).

The most likely diagnosis is

A) asymptomatic cholecystitis
B) alcoholic liver disease
C) Gilbert's syndrome
D) hemolytic anemia

57. A healthy 18-year-old female sees you for a preparticipation evaluation and well care visit prior to soccer season. She has no significant previous medical history and no current problems. She says she is not sexually active. She has completed the HPV vaccine series.

Which one of the following would be most appropriate for cervical cancer screening for this patient?

A) No screening at this visit
B) Annual Papanicolaou tests
C) Papanicolaou testing alone every 3 years
D) Papanicolaou testing and HPV testing every 3 years

58. Which one of the following can help to minimize the pain of lidocaine (Xylocaine) injection?

A) Slowly inserting the needle through the skin
B) Avoiding injection into the subcutaneous tissue
C) Injection of the solution only after fully inserting the needle at the target site
D) Cooling the solution to refrigerator temperature prior to injecting it
E) Buffering the solution with sodium bicarbonate

59. Which one of the following is most appropriate for patients with asplenia?

A) Lifelong daily antibiotic prophylaxis
B) Antibiotics for any episode of fever
C) An additional dose of Hib vaccine
D) Avoiding live attenuated influenza vaccine
E) Withholding pneumococcal vaccine

60. A 37-year-old graphic designer presents to your office with a history of several months of radial wrist pain. She does not recall any specific trauma but notes that it hurts to hold a coffee cup. Finkelstein's test is positive and a grind test is negative, and there is tenderness to palpation over the radial tubercle.

Which one of the following would be most appropriate at this point?

A) Plain radiography focusing on the scaphoid
B) Rest and a thumb spica wrist splint
C) MRI of the wrist
D) A short arm cast

61. A 19-year-old college wrestler presents with cellulitis of his left arm extending from a small pustule on his hand to the axilla. He appears acutely ill and has a temperature of 38.9°C (102.0°F). His WBC count is 22,000/mm^3 (N 4300–10,800). He is admitted to the hospital.

The initial drug of choice for this patient would be

A) ciprofloxacin (Cipro)
B) clindamycin (Cleocin)
C) doxycycline
D) trimethoprim/sulfamethoxazole
E) vancomycin

62. Which one of the following is an indication for a second dose of pneumococcal polysaccharide vaccine in children?

A) A cerebrospinal fluid leak
B) Cyanotic congenital heart disease
C) Type 1 diabetes mellitus
D) Sickle cell disease
E) Chronic bronchopulmonary dysplasia

63. A 66-year-old male who was hospitalized 2 months ago for an episode of heart failure sees you for follow-up. He complains of pain in his chest and on examination you note tenderness and a slight fullness deep to his nipple bilaterally.

Which one of the following drugs on his medication reconciliation list is most likely to cause this type of discomfort?

A) Digoxin (Lanoxin)
B) Enalapril (Vasotec)
C) Eplerenone (Inspra)
D) Hydralazine
E) Spironolactone (Aldactone)

64. A 30-year-old female reports that she and her husband have not been able to conceive after trying for 15 months. She takes no medications, has regular menses, and has no history of headaches, pelvic infections, or heat/cold intolerance. Her physical examination is unremarkable. Her husband recently had a normal semen analysis.

Which one of the following would be the most appropriate next step?

A) Observation for 1 year
B) TSH, free T_4, and prolactin levels
C) Hysterosalpingography
D) An estradiol level
E) A luteal-phase progesterone level

65. A 48-year-old male sees you for a routine health maintenance examination. His blood pressure is 142/90 mm Hg and you recommend that he return for a repeat blood pressure measurement. Eight weeks later his blood pressure is 138/88 mm Hg. He denies any symptoms on a review of systems. He tells you that on his 40th birthday he abruptly stopped smoking after smoking a pack of cigarettes a day since his early twenties. He is adopted and cannot provide a family history.

According to U.S. Preventive Services Task Force guidelines, which one of the following conditions should this patient be screened for now?

A) Abdominal aortic aneurysm
B) Peripheral arterial disease
C) Colon cancer
D) Type 2 diabetes mellitus
E) Hemochromatosis

66. Which one of the following conditions is the leading cause of death for patients with rheumatoid arthritis?

A) Infections
B) Coronary artery disease
C) Thromboembolic disease
D) Lymphoma
E) Lung cancer

67. A 67-year-old male presents with a persistent, intermittent cough. He says that his exercise tolerance has decreased, noting that he becomes short of breath more easily while playing tennis. He smoked briefly while in college but has not smoked for over 45 years, and reports no history of known pulmonary disease.

You obtain pulmonary function testing in the office to help you diagnose and manage his respiratory symptoms. His FVC and FEV_1/FVC are both less than the lower limit of normal as defined by the Third National Health and Nutrition Examination Survey. Repeat testing following administration of a bronchodilator does not correct these values.

Which one of the following would be most appropriate at this time?

A) A methacholine challenge test
B) A mannitol inhalation challenge test
C) Exercise pulmonary function testing
D) Testing for diffusing capacity of the lung for carbon monoxide (DLCO)

68. You see a 5-year-old white female with in-toeing due to excessive femoral anteversion. She is otherwise normal and healthy, and her mobility is unimpaired. Her parents are greatly concerned with her appearance and possible future disability, and request that she be treated.

You recommend which one of the following?

A) Observation
B) Medial shoe wedges
C) Torque heels
D) Sleeping in a Denis Browne splint for 6 months
E) Derotational osteotomy of the femur

69. Effective treatments for obsessive-compulsive disorder include

A) Freudian analysis
B) benzodiazepines
C) amphetamine salts
D) atypical antipsychotics
E) repetitive exposure to fearful stimuli

70. A 77-year-old male presents with significant postherpetic neuralgia in a chest wall distribution. Which one of the following is most likely to be effective in diminishing his discomfort?

A) Oral valacyclovir (Valtrex)
B) Topical lidocaine (Xylocaine) patches
C) Thoracic epidural corticosteroid injections
D) Herpes zoster vaccine
E) Acupuncture

71. A 50-year-old male presents to your office with a 1-hour history of an intense retro-orbital headache. This started while he was jogging and eased somewhat when he stopped, but has persisted along with some pain in his neck. Other than a blood pressure of 165/100 mm Hg, his examination is unremarkable. Noncontrast CT of the head is also unremarkable. His pain has persisted after 2 hours in the emergency department.

Which one of the following would be most appropriate at this time?

A) MRI of the head
B) Angiography
C) Nifedipine (Procardia) sublingually
D) Sumatriptan (Imitrex) subcutaneously
E) A lumbar puncture

72. A healthy 68-year-old male is seen in December for a routine examination. A review of his immunizations indicates that he received a standard dose of inactivated influenza vaccine at the health clinic in September. He received 23-valent pneumococcal vaccine (Pneumovax 23) at age 65.

He should now receive which one of the following?

A) High-dose influenza vaccine
B) 13-valent pneumococcal conjugate vaccine (Prevnar 13)
C) 23-valent pneumococcal vaccine
D) No vaccines at this time

73. A 68-year-old female with diabetes mellitus, coronary artery disease, fibromyalgia, and dyspepsia presents for follow-up. She has been taking omeprazole (Prilosec) for 10 years. It was started during a hospitalization, and her symptoms have returned with previous trials of discontinuation.

Which one of the following adverse events is this patient at risk for as a result of her omeprazole use?

A) Hypermagnesemia
B) Urinary tract infections
C) Nephrolithiasis
D) Hip fractures

74. A 14-year-old female bumped heads with another player in a soccer game. She was knocked down, appeared briefly dazed, and now has a headache and mild dizziness while seated on the sidelines.

Which one of the following would be most appropriate at this point?

A) Return to play after symptoms have resolved for at least 30 minutes
B) Immediate neuroimaging to rule out intracranial injury
C) Complete cognitive and physical rest for 24 hours before returning to normal activities
D) Initial complete cognitive and physical rest followed by an individualized graded return to activity
E) No sports participation until symptoms have been absent for 1 week

75. A 62-year-old male comes to your office as a new patient. He has a past history of a myocardial infarction and is currently in stage C heart failure according to the American Heart Association classification. His ejection fraction is 30%.

Which one of the following medications that the patient is currently taking is potentially harmful and should be discontinued if possible?

A) Diltiazem (Cardizem)
B) Lisinopril (Prinivil, Zestril)
C) Carvedilol (Coreg)
D) Spironolactone (Aldactone)
E) Atorvastatin (Lipitor)

76. You evaluate an 18-month-old male with fecal impaction and determine that disimpaction is indicated. Which one of the following would be most appropriate initially?

A) An oral stimulant such as sennosides (Senokot)
B) An oral osmotic agent such as polyethylene glycol 3350 (MiraLax)
C) An enema using saline, mineral oil, or phosphate soda
D) A bisacodyl (Dulcolax) rectal suppository
E) Manual disimpaction

77. A school nurse discovers head lice on a fourth-grade student. When should the student be permitted to return to class?

A) Immediately
B) When there are no visible nits
C) After a single treatment with a topical agent
D) After two treatments with a topical agent, 7 days apart

78. A 42-year-old female presents with a cough productive of blood-streaked sputum for the past 3 days. Her hemoptysis was preceded by several days of rhinorrhea, congestion, and subjective fever. She estimates the total amount of blood loss to be approximately 1 tablespoon. She is a nonsmoker and her past medical history is unremarkable. Vital signs are within normal limits, and other than an intermittent cough there are no abnormal findings on the physical examination.

Which one of the following would be the most appropriate next step?

A) Observation
B) A chest radiograph
C) Chest CT
D) Bronchoscopy
E) Antibiotics

79. A 33-year-old female presents with highly pruritic raised wheals on her extremities and torso. They only last for a few hours but have recurred over the last several days. There has been no oral swelling or respiratory symptoms.

Which one of the following is the best first-line treatment for this condition?

A) Topical corticosteroids
B) H_1-histamine blockers
C) H_2-histamine blockers
D) Leukotriene-receptor antagonists
E) Injectable epinephrine

80. A 30-year-old female is referred to you by a local optometrist after she was treated several times for anterior uveitis. You are concerned about an associated systemic disease. She feels well otherwise, and denies back or joint pain, rash, cough, or fever. A chest radiograph reveals enlarged mediastinal lymph nodes.

Which one of the following is most likely to be associated with her recurrent uveitis?

A) Cat-scratch disease
B) Lyme disease
C) Sarcoidosis
D) Syphilis
E) Tuberculosis

81. In addition to exercise, which one of the following vitamin supplements is recommended by the U.S. Preventive Services Task Force to help prevent falls in elderly patients living at home?

A) A
B) B complex
C) C
D) D
E) E

82. Which one of the following is a significant risk factor for esophageal adenocarcinoma?

A) Aspirin therapy
B) Ibuprofen therapy
C) Helicobacter pylori infection
D) Obesity
E) Crohn's disease

83. In older patients with aortic stenosis and a systolic murmur, which one of the following would be most concerning?

A) Weight loss
B) Frequent urination
C) Jaundice
D) Worsening headache
E) Exertional dyspnea

84. A 30-year-old female presents with dysuria and flank pain. She reports a fever of 102°F yesterday morning. She has not taken any antipyretics since that time, and today her temperature is 36.7°C (98.1°F). She has a pulse rate of 93 beats/min, a respiratory rate of 16/min, and a blood pressure of 116/58 mm Hg. The remainder of her physical examination is unremarkable, except for marked costovertebral angle tenderness.

A CBC reveals a WBC count of 14,590/mm^3 (N 4300–10,800) with 85% neutrophils, 12% lymphocytes, and 3% basophils, but is otherwise normal. A urine β-hCG is negative. A urine dipstick is positive for leukocyte esterase, and urine microscopic analysis is notable for <1 RBC and >50 WBCs/hpf. Urine culture results are pending.

You confirm she has no medication allergies. Which one of the following oral antibiotics would be most appropriate for empiric therapy?

A) Amoxicillin
B) Ciprofloxacin (Cipro)
C) Erythromycin
D) Metronidazole (Flagyl)
E) Nitrofurantoin (Furadantin)

85. A 40-year-old male respiratory therapist presents for a health examination prior to hospital employment. His history indicates that as a child he lived on a farm in Iowa. His examination is unremarkable, but a chest radiograph shows that both lung fields have BB-sized calcifications in a miliary pattern. No other findings are noted. A PPD skin test is negative.

The findings in this patient are most likely a result of

A) HIV infection
B) histoplasmosis
C) coccidioidomycosis
D) tuberculosis
E) cryptococcosis

86. A 43-year-old female complains of easy bruising. She is otherwise asymptomatic. A CBC reveals a platelet count of 23,000/mm^3 (N 150,000–450,000). A peripheral smear reveals giant platelets. A workup is negative for autoimmune causes, including Graves disease, HIV, Epstein-Barr virus, cytomegalovirus, varicella zoster, hepatitis C, and Helicobacter pylori. She is on no prescription or over-the-counter medications and denies alcohol or drug use.

Which one of the following would be the most appropriate initial management?

A) Platelet transfusion
B) Corticosteroids
C) Thrombopoietin-receptor agonists
D) A bone marrow biopsy
E) Splenectomy

87. A 22-year-old female with a 2-week history of paroxysmal cough is found to have pertussis confirmed by a polymerase chain reaction test and a nasal swab culture. Which one of the following is the antibiotic of choice for this patient?

A) Amoxicillin
B) Azithromycin (Zithromax)
C) Ciprofloxacin (Cipro)
D) Clindamycin (Cleocin)
E) Doxycycline

88. While performing a digital rectal examination of the prostate on a 67-year-old patient with diabetes mellitus, you note the findings shown below. The patient confirms that the area has been itchy for some time but he has been reluctant to seek care. He has tried a variety of over-the-counter moisturizing lotions with limited success.

Of the following topical treatments, which one is most likely to provide significant improvement?

A) Antibacterial ointment
B) Antifungal cream
C) Antiviral ointment
D) Corticosteroid cream
E) Rubbing alcohol

89. A 73-year-old male is seen for follow-up of elevated blood pressure. He has no comorbidities. His blood pressure after several months of lifestyle modifications is 160/102 mm Hg. He is started on lisinopril (Prinivil, Zestril), 10 mg daily.

According to the JNC 8 panel, the blood pressure goal for this patient is which one of the following?

A) < 160/100 mm Hg
B) < 150/90 mm Hg
C) < 140/90 mm Hg
D) < 130/85 mm Hg
E) 120/80 mm Hg

90. Terminally ill cancer patients who receive palliative chemotherapy

A) survive longer
B) are less likely to die at home
C) are less likely to undergo CPR
D) are less likely to undergo mechanical ventilation
E) are referred to hospice earlier in their disease course

91. A 14-year-old male presents to your office with a high fever that began suddenly. He has a diffuse petechial rash and some nuchal rigidity on examination. A lumbar puncture is performed, and gram-negative diplococci are found. You admit him to the hospital for treatment.

Which one of the following would be most appropriate for prevention of secondary disease at this time?

A) Immediate chemoprophylaxis for his entire school
B) Immediate vaccination of all contacts
C) Chemoprophylaxis for family members and very close contacts only
D) Isolation of all family members for 1 week
E) No preventive measures until culture results are available

92. A 58-year-old male with COPD presents with a 5-day history of increased dyspnea and purulent sputum production. He is afebrile. His respiratory rate is 24/min, heart rate 90 beats/min, blood pressure 140/80 mm Hg, and oxygen saturation 90% on room air. Breath sounds are equal, and diffuse bilateral rhonchi are noted. He is currently using albuterol/ipratropium by metered-dose inhaler three times daily.

In addition to antibiotics, which one of the following would be most appropriate for treating this exacerbation?

A) A single dose of intramuscular dexamethasone
B) Oral prednisone for 5 days
C) Daily inhaled fluticasone (Flovent)
D) Hospital admission for intravenous methylprednisolone sodium succinate (Solu-Medrol)
E) No corticosteroids at this time

93. A 25-year-old male daycare worker presents with a 3-week history of bloating and foul-smelling stools. On examination the patient has mild, diffuse abdominal tenderness and increased bowel sounds.

Which one of the following is the most likely cause of this patient's problem?

A) Hepatitis A
B) Clostridium difficile
C) Enterotoxigenic Escherichia coli
D) Giardia lamblia
E) Campylobacter

94. A 60-year-old female has a strong family history of breast cancer and is considering tamoxifen (Soltamox) to reduce her risk. Which one of the following is an effect associated with this treatment that should be included in the shared decision-making discussion with the patient?

A) An increased risk of bone fractures
B) An increased risk of endometrial cancer
C) A reduction in leg cramps
D) A decreased risk of thromboembolic events
E) A reduction in vasomotor symptoms

95. A 57-year-old male presents to the emergency department complaining of dyspnea, cough, and pleuritic chest pain. A chest radiograph shows a large left-sided pleural effusion. Thoracentesis shows a pleural fluid protein to serum protein ratio of 0.7 and a pleural fluid LDH to serum LDH ratio of 0.8.

Which one of the following causes of pleural effusion would be most consistent with these findings?

A) Cirrhosis
B) Heart failure
C) Nephrotic syndrome
D) Pulmonary embolism
E) Superior vena cava obstruction

96. A copper T 380A intrauterine device (ParaGard) would be preferred over a levonorgestrel-releasing intrauterine device (Mirena) in a patient with a history of which one of the following?

A) Nulliparity
B) Current smoking
C) Acute deep vein thrombosis
D) Severe cirrhosis
E) Heart failure

97. The mother of a 2-year-old calls you for advice because her child has an acute cough that is keeping him awake at night. Which one of the following has been shown in a double-blind, randomized, placebo-controlled study to decrease nighttime cough and improve sleep in children with this problem?

A) Sugar water
B) Cinnamon
C) Turmeric
D) Ginger
E) Honey

98. Which one of the following is an effect of long-term treatment for narcotic addiction with methadone and buprenorphine?

A) Greater success at producing minimal opiate use than detoxification programs
B) Significant teratogenic effects
C) Frequent diversion of opiates
D) Decreased associated cocaine abuse

99. How many arteries and veins are normally found in the umbilical cord on a newborn examination?

A) 1 artery, 1 vein
B) 1 artery, 2 veins
C) 2 arteries, 1 vein
D) 2 arteries, 2 veins
E) 2 arteries, 3 veins

100. A 12-month-old male is brought to your office by his mother because of concerns about his eating. She states that he throws tantrums while sitting in his high chair, dumps food on the floor, and refuses to eat. She has resorted to feeding him cookies, crackers, and juice, which are "all he will eat." A complete physical examination, including a growth chart of weight, length, and head circumference, is normal.

Which one of the following would be the most appropriate recommendation?

A) Use disciplinary measures to force the child to eat a healthy breakfast, lunch, and dinner
B) Leave the child in the high chair until he has eaten all of the healthy food provided
C) Play feeding games to encourage consumption of healthy meals or snacks
D) Skip the next meal if the child refuses to eat
E) Provide healthy foods for all meals and snacks, and end the meal if the child refuses to eat

101. A 55-year-old female presents with lateral hip pain over the outer thigh. She has no history of injury, although she has just begun a walking program to lose weight. She has increased pain when she lies on that side at night. Her examination is unremarkable except that she is overweight and has tenderness over the greater trochanter. There is no pain with internal and external rotation of the hip. A radiograph reveals minimal osteoarthritic changes.

Which one of the following would be most appropriate at this point?

A) Serum protein electrophoresis
B) A bone scan
C) A bone density study
D) MRI
E) A corticosteroid injection

102. A 70-year-old male who recently moved to your area sees you for the first time. He has a previous history of myocardial infarction, has a pacemaker, and has hypertension that had been well controlled on hydrochlorothiazide and atenolol (Tenormin) for several years. About 6 months ago his previous physician had to add amlodipine (Norvasc) to his regimen. On examination he has mild arteriolar narrowing in his fundi and there is a systolic bruit just to the right of his umbilicus. He has a log of home blood pressure readings that average 138/88 mm Hg for the past 2 months. His serum creatinine level has gone from 1.2 mg/dL to 1.4 mg/dL (N 0.6–1.2) in the past 2 months.

Which one of the following would be most appropriate at this time?

A) Referral for stent placement
B) Scheduling an arteriogram
C) A captopril renal scan
D) Adding losartan (Cozaar) to his regimen
E) Continued monitoring of serum creatinine

103. A 25-year-old male presents with a 3-day history of cough, chills, and fever. The patient was previously healthy and has no chronic medical problems. He has no known drug allergies. On examination he is alert and oriented, and has a temperature of 38.4°C (101.1°F), a pulse rate of 88 beats/min, a blood pressure of 120/70 mm Hg, a respiratory rate of 16/min, and an oxygen saturation of 98%.

Auscultation of the lungs reveals no wheezing and the presence of right basilar crackles. A chest radiograph shows a right lower lobe infiltrate.

There is a low rate of macrolide-resistant pneumococcus in the community. Which one of the following is the most appropriate initial management of this patient?

A) Outpatient treatment with azithromycin (Zithromax)
B) Outpatient treatment with cefuroxime (Ceftin)
C) Inpatient treatment on the medical floor with ceftriaxone (Rocephin) and azithromycin
D) Inpatient treatment on the medical floor with piperacillin/tazobactam (Zosyn) and levofloxacin
E) Inpatient treatment in the intensive-care unit with ceftriaxone, levofloxacin, and vancomycin (Vancocin)

104. A mother brings in her 10-year-old son because of a swollen area in his neck that she first noticed yesterday. He has also had symptoms of an upper respiratory infection. On examination the child has a runny nose but otherwise appears well. Palpation reveals a soft, 1.5-cm, slightly tender mass, inferior to the angle of the mandible and anterior to the sternocleidomastoid muscle.

The most likely diagnosis is

A) thyroglossal duct cyst
B) dermoid cyst
C) branchial cleft cyst
D) thyroid tumor

105. Treatment of rhabdomyolysis should routinely include which one of the following?

A) Bicarbonate-containing fluids
B) Loop diuretics
C) Mannitol
D) Parenteral corticosteroids
E) Isotonic saline

106. A 26-year-old pet groomer sustained a dog bite to her left hand 2 hours ago. On examination a 4-cm $\times$ 2.5-cm laceration is noted on the thenar eminence of her palm. Although the wound shows some gaping there is minimal active bleeding. No neurovascular injury is noted.

Which one of the following is an indication for antibiotics in this patient?

A) A wound size >2 cm
B) The presence of wound gaping
C) A bite involving the hand
D) The patient's occupation

107. You see a 27-year-old male with autosomal dominant polycystic kidney disease. He has no other medical problems and his renal function has always been normal on annual testing. Today the patient reports his blood pressure at home has been 142–150/84–90 mm Hg. His blood pressure at this visit is 145/88 mm Hg.

Which one of the following medications is preferred for the initial management of hypertension in this patient?

A) Amlodipine (Norvasc)
B) Chlorthalidone
C) Furosemide (Lasix)
D) Lisinopril (Prinivil, Zestril)

108. A 30-year-old female is being evaluated for chronic pain, fatigue, muscle aches, and sleep disturbance. Which one of the following would be best for making a diagnosis of fibromyalgia?

A) A structured symptom history
B) Examination for tender points
C) Laboratory testing
D) A muscle biopsy
E) Electromyography

109. Sympathomimetic decongestants such as pseudoephedrine and phenylephrine can be problematic in elderly patients because they can

A) decrease blood pressure
B) cause bradycardia
C) worsen existing urinary obstruction
D) enhance the anticholinergic effects of other medications
E) enhance the sedative effects of other medications

110. You have prescribed oral iron replacement for a 46-year-old female with iron deficiency anemia related to heavy menses. She wants to be sure that the iron she takes will be absorbed well.

Which one of the following would you suggest for improving iron absorption?

A) Calcium
B) Vitamin C
C) Coffee
D) Tea

111. Which one of the following conditions can affect hemoglobin A_{1c} levels?

A) Heart failure
B) Chronic hemolytic anemia
C) COPD
D) Hypothyroidism

112. Many of the changes that occur as part of aging affect pharmacokinetics. Which one of the following is INCREASED in geriatric patients?

A) Drug absorption
B) The glomerular filtration rate
C) Lean body mass
D) The volume of distribution of water-soluble compounds such as digoxin
E) The percentage of body fat

113. A 60-year-old male with a long-standing history of hypertension seeks your advice about pain relief from his osteoarthritis. He has tried acetaminophen and topical capsaicin cream without much benefit. He is concerned about media reports of NSAIDs causing heart problems and is unsure which ones would be safest for him to use.

Based on current evidence, which one of the following NSAIDs would you recommend as being LEAST likely to be associated with an increased risk of myocardial infarction?

A) Celecoxib (Celebrex)
B) Diclofenac (Zorvolex)
C) Ibuprofen
D) Meloxicam (Mobic)
E) Naproxen (Naprosyn)

114. A 26-year-old male presents with a sore throat and a temperature of 38.3°C (101.0°F). On examination you note muffling of the voice and unilateral tonsillar swelling with a shift of the uvula away from the affected tonsil. A rapid test for Streptococcus pyogenes is negative.

Which one of the following would be most appropriate at this point?

A) Laboratory testing for infectious mononucleosis
B) Immediate tonsillectomy
C) Initiation of antibiotics with close clinical follow-up
D) Culture of the throat and delayed initiation of antibiotics pending results

115. A 7-year-old male is brought to your office with a 2-day history of rash. He developed two itchy spots on his legs yesterday and today he has multiple purple, slightly painful lesions on his legs. A few days ago he was ill with cold-like symptoms, stomach pain, and a fever up to 101.2°F. He complained of leg pain at the time and his left ankle is now swollen. His fever resolved 2 days ago and he now feels fine but limps when he walks.

On examination he is afebrile with a normal blood pressure and pulse rate. He is active in the examination room. His physical examination is normal except for purpuric lesions on his legs and buttocks and edema and mild pain of the left ankle. A urinalysis is negative.

Which one of the following would be most appropriate in the management of this patient?

A) Acetaminophen
B) Amlodipine (Norvasc)
C) Amoxicillin
D) Cyclophosphamide
E) Prednisone

116. A 32-year-old male smoker presents with a 4-day history of progressive hoarseness. He is almost unable to speak, and associated symptoms include a cough slightly productive of yellow sputum, as well as tenderness over the ethmoid sinuses. He is afebrile and has normal ear and lung examinations. His oropharynx is slightly red with no exudate, and examination of his nasal passages reveals mucosal congestion.

Which one of the following would be the most appropriate treatment?

A) Amoxicillin for 10 days
B) Omeprazole (Prilosec), 40 mg daily
C) Azithromycin (Zithromax) for 5 days
D) Symptomatic treatment only

117. A 26-year-old female presents with acute low back pain. She says it started a week ago after she lifted a sofa when helping a friend move. The patient's medical history is otherwise negative. The patient says the pain is limited to the lower back. The physical examination is normal, including the neurologic examination.

Which one of the following would be the most appropriate choice for imaging at this time?

A) No imaging
B) A plain film of the lumbar spine
C) MRI of the lumbar spine
D) A DXA scan
E) A PET scan

118. A 50-year-old female sees you for follow-up of uncontrolled hypertension. Her recent blood pressure measurements average $>175/105$ mm Hg. The patient has diabetes mellitus and a BMI of 32.3 kg/m^2. Physical findings are otherwise noncontributory. Recent laboratory studies include three different potassium levels <3.5 mEq/L (N 3.5–5.0) despite increasing dosages of oral potassium supplements, with the dosage now at 100 mEq daily.

Which one of the following would be most appropriate at this point?

A) Measurement of peripheral aldosterone concentration and peripheral renin activity
B) CT of the abdomen
C) Renal CT angiography
D) An aldosterone suppression test

119. You are asked to medically manage a 66-year-old patient who is scheduled for an elective cholecystectomy. He is also being treated for panhypopituitarism secondary to a pituitary macroadenoma resection many years ago. His medications include levothyroxine (Synthroid), 125 μg/day; prednisone, 10 mg in the morning and 5 mg in the evening; and fludrocortisone, 10 mg/day.

Preoperative orders for this patient should include which one of the following?

A) Normal saline intravenously as a bolus
B) ACTH daily while on intravenous fluids
C) Hydrocortisone, 25 mg intravenously every 8 hr
D) Levothyroxine, 250 μg intravenously daily

120. In which one of the following patients should a creatine kinase level be obtained to detect Duchenne muscular dystrophy?

A) A 2-month-old male who is unable to roll over from prone to supine
B) A 7-month-old male who is unable to get into a sitting position unassisted
C) A 15-month-old male who is walking but is unable to stand up from a supine position without support
D) A 16-month-old male who is not walking unassisted
E) A 6-month-old with high neuromuscular tone on physical examination

121. You see a 4-year-old male in your office for evaluation of persisting fever, rash, and red eyes. In a discussion with his father you learn that the child has had temperatures in the 99°F–102°F range for 6 days, along with what the father describes as "pink eye." Today the child broke out in a rash on his chest and back and also has cracked red lips. On examination you confirm that he has bilateral nonpurulent conjunctival injection and a generalized maculopapular rash, as well as erythema of his hands and feet.

Which one of the following is recommended at this time to evaluate for cardiac complications?

A) An EKG
B) Transthoracic echocardiography
C) Cardiac CT
D) Magnetic resonance (MR) coronary angiography
E) A radionuclide myocardial perfusion scan

122. Which one of the following is true regarding electronic cigarettes?

A) They release lower concentrations of particulate matter than tobacco cigarettes
B) They are a nicotine-free alternative to tobacco
C) They are not regulated by the FDA
D) They have been proven to be effective for smoking cessation
E) They have been shown to be safe in pregnancy

123. Which one of the following is the leading cause of human death in the world as a whole?

A) Ischemic heart disease
B) Premature birth
C) Diarrheal diseases
D) HIV/AIDS
E) Cancers of the lungs, bronchi, and trachea

124. A 25-year-old female who is 3 months post partum presents with multiple complaints, including increasing weakness and fatigue, intolerance to warm environments, a weight loss of 30 lb despite an increased appetite, difficulty sleeping, awareness that her heart is beating faster and "pounding" in her chest, increasing restlessness and difficulty concentrating, increased tremulousness, and a significant swelling in her neck. She takes no medication, has experienced no recent trauma, and has not ingested large amounts of iodine.

When you examine her you find no exophthalmos or lid lag and no pretibial edema, but her skin is warm, smooth, and moist. You also find a smooth, non-nodular, nontender, enlarged thyroid gland, clear lungs, a resting tremor, and hyperactive reflexes.

Laboratory testing reveals a low TSH level, elevated free T_3 and free T_4, and high uptake on a radioactive iodine uptake scan.

Which one of the following is the most likely diagnosis?

A) Postpartum thyroiditis
B) Silent thyroiditis
C) Subacute thyroiditis
D) Graves disease
E) Exogenous thyroid ingestion

125. A previously healthy 59-year-old male is brought to the emergency department by his wife, who describes symptoms of confusion and ataxia. She also says that he has had a fever and cough for the past 2 weeks. On examination he has a temperature of 39.0°C (102.2°F), a heart rate of 125 beats/min, a respiratory rate of 25/min, a blood pressure of 85/46 mm Hg, and an O_2 saturation of 88%. Laboratory findings include a WBC count of 15,500/mm^3 (N 4300–10,800), a glomerular filtration rate of 45%, and a hemoglobin level of 9.1 g/dL (N 13.0–18.0). A chest radiograph reveals a large left lower lobe infiltrate.

You start the patient on an appropriate antibiotic regimen. Which one of the following is the most appropriate initial treatment of this patient's hypotension?

A) Dobutamine
B) Dopamine
C) Norepinephrine
D) Aggressive fluid resuscitation
E) Packed red blood cell transfusion

126. A 17-year-old male high school football running back is hit on the lower leg by an opposing player's helmet when the other player dives for a fumble. The running back presents to the emergency department after the game with significant swelling and bruising of the lower leg. Symptoms include exceptionally severe pain that is worse with stretching the calf muscles. There is no weakness of the extremity and sensation is intact. You examine the leg and can palpate pulses. Plain radiographs do not show a fracture.

Which one of the following should be ordered next?

A) Noninvasive arterial ultrasonography of the leg
B) Noninvasive venous ultrasonography of the leg
C) CT of the calf region
D) MRI of the calf region
E) Tissue pressure studies

127. A 23-year-old healthy male is sexually active with other men and does not use condoms. He is interested in reducing his risk of contracting HIV by using a daily oral antiretroviral medication.

Which one of the following laboratory tests should be done no more than 7 days before initially prescribing pre-exposure prophylaxis with emtricitabine/tenofovir disoproxil (Truvada)?

A) A CD4 cell count
B) Antibody testing for HIV
C) Hemoglobin concentration
D) A platelet count
E) An ALT level

128. A patient is admitted to the hospital for acute deep vein thrombosis of the lower extremity and started on anticoagulation therapy. The nursing staff asks for an activity order.

Which one of the following should be ordered?

A) Activity as tolerated
B) Bed rest until the patient has been hospitalized for 24 hours
C) Bed rest with bathroom privileges until the patient has been hospitalized for 24 hours
D) Bed rest until discharged
E) Bed rest with bathroom privileges until discharged

129. Which one of the following potential bioterrorism agents requires treatment with 60 days of continuous antibiotics?

A) Anthrax
B) Botulism
C) Pneumonic plague
D) Smallpox
E) Tularemia

130. Which one of the following is recommended in all patients with croup, including those with mild disease?

A) Humidification therapy
B) Oral dexamethasone as a single dose
C) Oral diphenhydramine (Benadryl) every 6 hours until improvement
D) Subcutaneous epinephrine as a single dose
E) Intramuscular ceftriaxone (Rocephin) as a single dose

131. A 17-year-old male presents to the urgent care clinic 15 minutes after being stung by a wasp. He feels weak, his voice is hoarse, and he is beginning to have trouble breathing.

Which one of the following should be administered first?

A) Intramuscular epinephrine
B) Intravenous diphenhydramine (Benadryl)
C) Intravenous famotidine (Pepcid)
D) Intravenous methylprednisolone sodium succinate (Solu-Medrol)
E) An intravenous bolus of normal saline

132. A pet reptile is most likely to transmit which one of the following to human contacts?

A) Hantavirus
B) Psittacosis (Chlamydophila psittaci)
C) Plague (Yersinia pestis)
D) Pasteurella multocida
E) Salmonella

133. A mother brings in her 2-month-old infant for a routine checkup. The baby is exclusively breastfed, and the mother has no concerns or questions.

In addition to continued breastfeeding, which one of the following would you recommend continuing or adding at this time?

A) Iron supplementation
B) Vitamin D supplementation
C) A multivitamin
D) 8 oz of water daily
E) 4 oz of cereal daily

134. A 78-year-old white male presents to your office with his daughter for a follow-up visit for his diabetes. He has a history of peripheral neuropathy and mild Alzheimer's dementia. He continues to be socially active in his community. He is on several medications, including insulin glargine (Lantus), amitriptyline, donepezil (Aricept), and clonazepam (Klonopin). His daughter asks whether he should continue to drive his car.

Which one of the following would be most appropriate in the context of this office visit with regard to evaluating his driving safety?

A) A thorough history focused on the patient's driving, from both him and his daughter
B) A written driving test
C) A road test to observe his driving
D) A letter to the local agency in charge of drivers' licenses advising license removal

135. Which one of the following is more typical of a keloid rather than a hypertrophic scar?

A) Location on an extensor surface
B) Expansion beyond the margins of the inciting injury
C) Development soon after the inciting trauma
D) Regression over time

136. Which one of the following should be monitored during testosterone replacement therapy?

A) Patient Health Questionnaire 9 (PHQ-9) scores
B) Fasting glucose levels
C) Fasting lipid profiles
D) Hematocrit
E) Overnight polysomnography

137. A 67-year-old male presents with thoracic spine pain and is found to have two thoracic vertebral compression fractures. He has no history of recent trauma. His general health has been satisfactory except for a seizure disorder controlled with levetiracetam (Keppra). He does not smoke and uses alcohol rarely. A CBC, comprehensive metabolic panel, and erythrocyte sedimentation rate are within normal limits. A DXA scan shows a T-score of –2.8.

Which one of the following would be most appropriate at this time?

A) Protein electrophoresis
B) HIV screening
C) A testosterone level
D) A parathyroid hormone level

138. A 45-year-old male was admitted to the hospital for nausea resulting from chemotherapy for colon cancer. He has no other chronic diseases and takes no routine medications. He was mildly dehydrated on admission and has been receiving intravenous fluids (D5 ½-normal saline with potassium chloride) at slightly higher than maintenance rates through an indwelling port for the last 24 hours. The nausea is being controlled by antiemetics, and his condition is improving. Results of routine blood work at the time of admission and from the following morning are shown below.

Test	Admission	Following Morning
Glucose	109 mg/dL (N 65–110)	371 mg/dL
BUN	13 mg/dL (N 7–21)	9 mg/dL
Creatinine	0.9 mg/dL (N 0.6–1.6)	0.9 mg/dL
Sodium	143 mEq/L (N 136–144)	129 mEq/L
Potassium	3.7 mEq/L (N 3.6–5.1)	6.6 mEq/L
Chloride	110 mEq/L (N 101–111)	108 mEq/L
Total CO_2	20 mEq/L (N 22–32)	22 mEq/L

Which one of the following would be the most appropriate next step?

A) Start an intravenous insulin drip
B) Order blood work taken from a peripheral vein
C) Restrict the patient's free water intake
D) Switch from normal saline to hypertonic saline
E) Treat with diuretics

139. Which one of the following is most likely to be associated with resistant hypertension in adults?

A) Obstructive sleep apnea
B) Primary aldosteronism
C) Renal artery stenosis
D) Renal parenchymal disease
E) Thyroid disease

140. A 78-year-old female presents with a red eye. She reports drainage and pain in her left eye since she woke up today, but no photophobia. Examination of the eye shows conjunctival erythema and a mucopurulent discharge. The pupil is normal in size and reactive to light.

Which one of the following should prompt immediate referral to an ophthalmologist?

A) Bilateral eye redness
B) A corneal abrasion noted on fluorescein staining
C) Copious mucopurulent drainage from the eye
D) Bright red blood noted under the conjunctiva
E) Reduction of visual acuity

141. A long-term care resident is admitted to the hospital. The patient has a living will which specifies that "treatment be withheld or withdrawn and that I be permitted to die naturally with only the administration of medication or the performance of any medical treatment deemed necessary to alleviate pain." The patient has appointed his wife as his health care surrogate. He has mild Alzheimer's disease and scored 26 out of 30 on a Mini-Mental State Examination performed within the last month. He is alert and pleasant and responds appropriately to questions but cannot remember the current date. His wife is with him.

Which one of the following would be most appropriate with regard to decision making and ordering related to the patient's code status?

A) Determine the patient's competence
B) Assess the patient's decision-making capacity
C) Confirm the code status with the patient's wife
D) Write a Do Not Resuscitate (DNR) order
E) Order comfort measures only

142. A 42-year-old female presents with a 2-month history of right-sided shoulder pain. A history reveals that her job requires repetitive motion, including abduction of the shoulder. Ibuprofen has not been helpful and the pain interferes with her sleep. The physical examination suggests rotator cuff tendinitis. A radiograph of the shoulder is normal.

You discuss treatment options and the patient decides to proceed with a corticosteroid injection. Which one of the following is the appropriate anatomic location for the injection?

A) The acromioclavicular joint
B) The subacromial space
C) The intra-articular shoulder joint under fluoroscopy
D) The area of insertion of the deltoid muscle
E) The area of insertion of the long head of the biceps

143. A 35-year-old female asks you about options for weight loss. She weighs 104 kg (229 lb) and has a BMI of 34 kg/m^2. Her health problems include hypertension and depression.

According to the U.S. Preventive Services Task Force, which one of the following is the most appropriate initial recommendation for weight-loss management in this patient?

A) A high-protein diet
B) A low-carbohydrate diet
C) Behavioral counseling
D) Bariatric surgery

144. A 7-year-old male is brought to your office with a 10-day history of cough and fever. A chest radiograph shows no acute air-space process but four posterior healing rib fractures. The child's past medical history is unremarkable.

Which one of the following would be most appropriate at this point?

A) A skeletal survey
B) Studies to evaluate for osteogenesis imperfecta
C) Studies to evaluate for rickets
D) An immediate referral to initiate a child abuse investigation

145. A 50-year-old male sees you for a health maintenance visit. He has not been to a physician for 5 years because he feels very healthy and believed he was up-to-date on all preventive screenings. You review his medical record and notice he has never had an HIV screening test. On further questioning you confirm that he is at very low risk for contracting HIV.

Based on recommendations from the U.S. Preventive Services Task Force, you tell him that you routinely conduct opt-out HIV screening for

A) all patients age 5 to 75
B) all patients age 15 to 65
C) all patients younger than 50, and patients 50 or older who are at high risk
D) only patients at high risk for HIV, regardless of age

146. A 28-year-old gravida 1 para 0 at 39 weeks gestation presents for routine outpatient obstetric care and is found to have a blood pressure of 145/95 mm Hg. A complete review of systems is notable only for chronic low back pain causing poor sleep. The physical examination is normal, including a nontender, gravid uterus and a fetal heart rate of 150 beats/min. The cervical examination reveals firm consistency, 1 cm dilation, 50% effacement, and –3 station. The patient's blood pressure is checked 5 hours later and is 142/94 mm Hg.

Based on the 2013 ACOG guidelines for management of hypertension in pregnancy, which one of the following should be the next step in management?

A) Admit the patient for induction of labor
B) Measure 24-hour urine protein, with induction of labor if the level exceeds 300 mg
C) Begin oral nifedipine (Procardia) and recheck her blood pressure in 24–48 hours
D) Place the patient on strict bed rest and check her blood pressure twice weekly
E) Begin twice-weekly office visits with assessment for preeclampsia

147. A 40-year-old obese African-American male presents with a history of excessive daytime drowsiness. At home he falls asleep shortly after starting to read or watch television. He admits to nearly crashing his car twice in the past month because he briefly fell asleep behind the wheel. Most frightening to the patient have been episodes characterized by sudden loss of muscle tone, lasting about 1 minute, associated with laughing. An overnight sleep study shows decreased sleep latency and no evidence of obstructive sleep apnea.

Appropriate treatment includes which one of the following?

A) Methylphenidate (Ritalin)
B) Zolpidem (Ambien) at bedtime
C) Carbidopa/levodopa (Sinemet)
D) Weight reduction
E) Avoidance of daytime napping

148. A 68-year-old female presents with a 2-month history of painful, swollen wrists and knees. The pain is always present and is accompanied by stiffness in these joints for 2–3 hours every morning. Her past medical history, family history, and social history are unremarkable. She takes a daily multivitamin.

A complete physical examination is notable only for symmetric, moderately swollen, slightly erythematous, and very tender wrists and knees. Range of motion is intact but increases her pain. Plain radiographs of these joints show erosions at the ulnar styloids. Lyme disease serologies are negative. Anti–cyclic citrullinated peptide (CCP) antibody testing is positive.

Which one of the following would be appropriate for this patient as a sole therapy for her joint condition?

A) Aspirin
B) Doxycycline
C) Methotrexate
D) Naproxen
E) Prednisone

149. A 50-year-old female presents to your office for evaluation of a 2-month history of dyspnea on exertion and a nonproductive cough. She has a previous history of hypertension, overactive bladder, gastroesophageal reflux disease, and recurrent urinary tract infections. Vital signs are unremarkable and she has an oxygen saturation of 94%. She has inspiratory crackles in the posterior lung bases that do not clear with coughing. Office spirometry shows that the FVC is only 80% of normal, but the FEV_1/FVC ratio is 0.85.

Which one of the patient's current medications is most likely to be the cause of her problem?

A) Lisinopril (Prinivil, Zestril)
B) Conjugated estrogens (Premarin)
C) Omeprazole (Prilosec)
D) Solifenacin (Vesicare)
E) Nitrofurantoin (Macrodantin)

150. A 25-year-old gravida 1 para 0 sees you for a routine prenatal visit. This is a planned pregnancy and you calculate her to be at approximately 14 weeks gestation based on the dates of her last menstrual period. She is healthy without any medical problems, takes no medication, and does not use tobacco products. She is adopted and does not know her family history. She feels well today and has no specific concerns. Her vital signs are stable, her weight is normal, and fetal heart tones are auscultated with a Doppler stethoscope at approximately 140 beats/min.

Which one of the following should be completed today?

A) A 1-hour glucose tolerance test
B) A group B Streptococcus screen
C) A TSH level
D) A urinalysis and urine culture
E) Evaluation for bacterial vaginosis

151. A 2-year-old male is brought to your office for a well child examination. Developmental screening reveals that he has about a 10-word vocabulary. His mother attributes this to their bilingual home but admits she is concerned about autism.

Which one of the following behaviors would provide additional evidence that the child may have autism?

A) Use of gestures rather than words to communicate ideas
B) Frequently being engrossed in pretend play with dolls
C) Becoming upset by normal noises
D) Seemingly excessive attempts to attract attention with his behavior
E) Repeated copying of parental facial expressions

152. A 16-year-old female presents for follow-up after a tibial stress fracture. The fracture was diagnosed 5 weeks ago by characteristic physical examination findings and radiographs showing a transverse fracture of the tibial diaphysis. She was placed on non–weight-bearing status for 2 weeks and after that was advised to limit activities that caused discomfort. In addition, she was placed on appropriate calcium and vitamin D supplementation based on results of her laboratory workup. The patient is a basketball player and would like to begin practicing with the team in 1 week. She says she is now able to walk without discomfort but has not tried running or jumping.

Which one of the following is necessary for this patient to be able to return to basketball participation next week?

A) Consultation with a sports medicine physician
B) A normal physical examination of the affected area
C) Normal radiographs of the tibia
D) A normal hydroxyvitamin D level

153. A 28-year-old male has had bright red blood in his semen with his last three ejaculations. He is sexually active. He considers himself in good health, takes no medications, has no other symptoms to suggest a coagulopathy, and has no other genitourinary symptoms. Examination of the testes shows no masses or tenderness. Findings on a digital rectal examination are normal.

Which one of the following would be appropriate at this time?

A) Coagulation studies including a platelet count and a prothrombin time
B) A serum PSA level
C) A urine probe for Neisseria gonorrhoeae and Chlamydia trachomatis
D) CT of the pelvis
E) Referral to a urologist

154. A 34-year-old female with newly diagnosed diarrhea-predominant irritable bowel syndrome (IBS) presents with worsening abdominal discomfort. Her abdominal discomfort is not severe but it is constant. She has tried dicyclomine (Bentyl) without relief and is interested in trying a different approach.

The patient has had negative testing for inflammatory bowel disease and celiac disease, along with normal blood tests. She asks about specific dietary modifications or medications that may be helpful for her abdominal discomfort.

Which one of the following interventions would you recommend?

A) Amitriptyline
B) Clarithromycin (Biaxin)
C) Loperamide (Imodium)
D) Increased intake of insoluble dietary fiber

155. A 22-year-old male presents to your office for evaluation of fatigue, poor appetite, and nausea. He states that when he stands too long he often gets dizzy but this is relieved by sitting. His symptoms have been gradually getting worse over the past year. His vital signs are normal but he is found to be orthostatic. A physical examination is unremarkable except for hyperpigmentation in his palmar creases and around his nipples. A basic metabolic panel is notable for a sodium level of 131 mEq/L (N 135–145) and a potassium level of 5.1 mEq/L (N 3.5–5.0).

Which one of the following is the most likely cause of this patient's symptoms?

A) Addison's disease
B) Cushing syndrome
C) Neurally mediated hypotension
D) Postural orthostatic hypotension and tachycardia syndrome
E) Hypothyroidism

156. A 26-year-old female has had a severe anaphylactic reaction to eggs in the past. Which one of the following influenza vaccines would be safest for her?

A) Live attenuated trivalent influenza vaccine
B) Recombinant trivalent influenza vaccine
C) Inactivated trivalent influenza vaccine
D) Inactivated quadrivalent influenza vaccine

157. A 35-year-old male with a 4-month history of pain in the medial aspect of his right knee sees you for follow-up. He has been doing physical therapy for the past month with minimal benefit. A plain radiograph is negative and MRI shows a tear in the medial meniscus.

Which one of the following is most likely to yield the best long-term result?

A) Referral for meniscectomy
B) Corticosteroid injection
C) Hylan GF 20 (Synvisc) injection
D) Continued physical therapy
E) A knee brace

158. Which one of the following effects of antioxidant supplementation has been demonstrated in randomized clinical trials?

A) Decreased mortality with vitamin A supplementation
B) Decreased mortality with β-carotene supplementation
C) Decreased mortality with vitamin E supplementation
D) Increased mortality with some antioxidant supplements

159. A 42-year-old male has symptoms of hypogonadism. Which one of the following should be ordered first?

A) Early morning total serum testosterone
B) Early morning total and free serum testosterone
C) Early morning total and late afternoon total serum testosterone
D) Early morning and late afternoon free serum testosterone
E) Early morning and late afternoon total and free serum testosterone

160. Which one of the following is the recommended first-line test for investigating suspected hyper- or hypothyroidism?

A) Free T_3
B) Free T_4
C) TSH
D) Antithyroglobulin
E) Antithyroid peroxidase

161. A 34-year-old G2P0101 at 11 weeks gestation comes to your office to establish care for her pregnancy. In reviewing her history you find that her first pregnancy was complicated by preeclampsia and she required induction of labor at 33 weeks. She also has chronic hypertension treated with chlorthalidone. Her blood pressure today is 128/78 mm Hg.

Which one of the following medications, if started today, will lower her risk of preeclampsia in this pregnancy?

A) Aspirin
B) Calcium
C) Labetalol
D) Nifedipine (Procardia)
E) Vitamin E

162. A 45-year-old female has ultrasonography of her kidneys as part of an evaluation for uncontrolled hypertension. The report notes an incidental finding of stones in the gallbladder, confirmed on right upper quadrant ultrasonography. She has no symptoms you can relate to the gallstones. Other than hypertension she has no chronic medical problems.

Which one of the following should you recommend to her at this time regarding the gallstones?

A) Expectant management
B) Oral dissolution therapy
C) Extracorporeal lithotripsy
D) Endoscopic retrograde cholangiopancreatography (ERCP)
E) Laparoscopic cholecystectomy

163. A mother brings her 7-year-old son in for a well child check and you find that their main concern is bedwetting. He has never achieved consistent nighttime continence. He currently wets the bed about 4 nights per week but has no difficulty maintaining continence during the day and reports no symptoms such as dysuria or urinary frequency. The parents have tried limiting his evening fluid intake but this has not helped. He is otherwise healthy. The patient wants to stop wearing nighttime diapers.

Which one of the following interventions has the best evidence of long-term success in addressing this condition?

A) A reward system for achieving dry nights
B) Use of a bed alarm
C) Desmopressin (DDAVP)
D) Imipramine (Tofranil)
E) Oxybutynin

164. A 55-year-old nonsmoking African-American female with diabetes mellitus sees you for a routine visit. She has no other cardiac risk factors. Her blood pressure is 120/74 mm Hg and she has a fasting total cholesterol level of 180 mg/dL, an HDL-cholesterol level of 52 mg/dL, and an LDL-cholesterol level of 100 mg/dL. Her calculated 10-year risk of atherosclerotic cardiovascular disease is 5.8%.

According to the 2013 American College of Cardiology/American Heart Association cholesterol guidelines, which one of the following is recommended for this patient?

A) No statin therapy
B) Low-intensity statin therapy
C) Moderate-intensity statin therapy
D) High-intensity statin therapy

165. A 65-year-old male with end-stage renal disease requires postoperative pain management. Which one of the following medications would be safest to use?

A) Fentanyl
B) Hydrocodone
C) Hydromorphone (Dilaudid)
D) Meperidine (Demerol)
E) Morphine

166. A 30-year-old male presents with a 2-week history of swelling of the right posterior elbow. He recalls bumping his elbow against a door, but his pain quickly subsided. He began to notice the swelling over the next 2 days. On examination he has normal range of motion with a boggy, nontender mass over the olecranon.

Which one of the following would be most appropriate at this point?

A) A posterior splint
B) Aspiration
C) A corticosteroid injection
D) A uric acid level and erythrocyte sedimentation rate
E) A compression dressing

167. A 23-year-old female sees you for the first time for a routine health maintenance evaluation. She tells you that her father just had a "heart valve replacement" at age 47. On examination you note a harsh 3/6 systolic murmur at the right upper sternal border. She feels well and her exercise tolerance is normal. Her history indicates that she has been well throughout her life and received appropriate childhood vaccinations and care for routine illnesses. She denies tobacco, alcohol, and drug use now and in the past. Her blood pressure today is 132/84 mm Hg. You are concerned about aortic valve disease and order an echocardiogram for further evaluation.

Which one of the following is the most likely cause of aortic valve disease in this patient?

A) Hypertension
B) Endocarditis
C) Bicuspid aortic valve
D) Rheumatic heart disease
E) Coronary atherosclerosis

168. A resting ankle-brachial index of 1.50 indicates which one of the following?

A) Normal circulation to a lower extremity
B) Borderline normal circulation which may not be problematic in an asymptomatic patient
C) Mild peripheral artery disease in a lower extremity
D) Severe peripheral artery disease in a lower extremity
E) Incompressible vessels in a lower extremity

169. A 69-year-old male sees you for a routine evaluation. He has been in good health and takes no medication other than tamsulosin (Flomax) for symptoms of benign prostatic hyperplasia. He has never smoked. His blood pressure is 121/78 mm Hg, pulse rate 72 beats/min, and respiratory rate 18/min. His general physical examination is unremarkable, including cardiac and abdominal examinations. A digital rectal examination reveals mild enlargement of the prostate, without nodules.

According to the U.S. Preventive Services Task Force, this patient should be screened for

A) elder abuse
B) aortic aneurysm
C) multifactorial fall risk
D) dementia
E) hepatitis C

170. Which one of the following has been shown to be effective for Lyme disease prophylaxis after removal of an engorged deer tick?

A) Amoxicillin
B) Ceftriaxone (Rocephin)
C) Cefuroxime axetil (Ceftin)
D) Doxycycline
E) Clarithromycin (Biaxin)

171. A 58-year-old female sees you 3 days after she was clearing her sinuses with steam and burned her face. She developed small patches of dry, painful erythema without blisters on her chin, the left side of her mouth, and her left cheek. She had no difficulty breathing. She applied cold water to the burn and decided to self-treat initially but came in because she was experiencing some pain. Her injury is shown below.

She received Td vaccine last year. In addition to analgesics for pain control, which one of the following would be appropriate?

A) Cleaning the wound with povidone iodine (Betadine)
B) Covering the wound with an occlusive dressing
C) Applying aloe
D) Applying hydrocortisone 1% cream
E) Starting broad-spectrum antibiotics

172. A 61-year-old female tells you that her brother was recently diagnosed with hereditary hemochromatosis and his physician suggested that she get tested. She feels well and has no significant health problems.

Which one of the following would be most appropriate for initial screening?

A) Serum transaminases
B) A CBC and a serum iron level
C) Testing for the HFE gene
D) Ferritin and transferrin saturation
E) Total iron binding capacity

173. Complications of hypoparathyroidism include

A) somnolence
B) low vitamin D
C) muscle flaccidity
D) hyperkalemia
E) refractory heart failure

174. A 42-year-old female presents to the emergency department with a 2-hour history of palpitations. Her physical examination is normal except for what seems to be a regular rhythm tachycardia and a blood pressure of 84/54 mm Hg. An EKG reveals a regular narrow-complex tachycardia at a rate of 180 beats/min without clear atrial activity.

The optimal treatment for this patient is

A) intravenous adenosine (Adenocard)
B) intravenous amiodarone (Cordarone)
C) intravenous diltiazem
D) intravenous verapamil
E) electrical cardioversion

175. You see a 2-year-old African-American male for a well child check. He is a new patient and his examination is within normal limits except for an approximately 0.75-cm umbilical hernia that is easily reducible. The father states that the hernia has been present since birth, although he thinks it has grown slightly over the last year. The child does not seem to be bothered by the hernia and the father does not think it has ever become incarcerated.

Which one of the following should you do now?

A) Reassure and observe
B) Advise daily application of pressure dressings
C) Order an ultrasound examination
D) Refer for surgical repair

176. Which one of the following medications is associated with a higher risk of death due to stroke or sudden cardiac death in patients with dementia?

A) Diazepam (Valium)
B) Fluoxetine (Prozac)
C) Paroxetine (Paxil)
D) Quetiapine (Seroquel)
E) Venlafaxine

177. A 65-year-old female is admitted to the hospital for a carotid endarterectomy and you are asked to make preoperative recommendations in advance of her surgery scheduled for tomorrow. She takes only low-dose aspirin. The physical examination is normal, including her blood pressure, as is an EKG. She has good exercise capacity and denies any symptoms of angina. You judge her to be stable for surgery.

Which one of the following should you recommend that the patient start today?

A) An ACE inhibitor
B) A β-blocker
C) A statin
D) A diuretic

178. The intensely pruritic rash shown below is typical of

A) contact dermatitis
B) herpes simplex
C) pityriasis rosea
D) tinea corporis

179. A 76-year-old male completed chemotherapy for carcinoma of the pancreas 3 months ago. He was seen 6 weeks ago by his oncologist and thought to be in remission. He presents to your office today with a 2-week history of malaise and epigastric pain. You perform an examination that indicates a possible epigastric mass.

Elevation of which one of the following laboratory studies would suggest recurrent pancreatic cancer?

A) α_1-Antitrypsin
B) α-Fetoprotein
C) Serum amylase
D) CA 19-9
E) CA-125

180. The most common source of chest pain in children is

A) pulmonary
B) cardiac
C) musculoskeletal
D) gastroesophageal
E) psychogenic

181. A 59-year-old male is being evaluated for a 2-day history of intermittent "heart fluttering." He reports that he has had high blood pressure for several years and has been reluctant to start treatment for it. His EKG is shown below.

Which one of the following laboratory tests is most likely to be abnormal in this patient?

A) D-dimer
B) Potassium
C) Troponin
D) TSH

182. An asymptomatic 60-year-old male sees you for a health maintenance visit. His past medical history is significant for hypertension and hyperlipidemia. His medications include chlorthalidone, 25 mg daily, and atorvastatin (Lipitor), 20 mg daily. He smoked 2 packs of cigarettes a day for 20 years but quit 5 years ago. The physical examination is normal. Laboratory findings include a normal basic metabolic panel, a cholesterol level of 210 mg/dL, an HDL-cholesterol level of 34 mg/dL, an LDL-cholesterol level of 150 mg/dL, and a triglyceride level of 200 mg/dL.

Which one of the following screening tests is recommended by the U.S. Preventive Services Task Force for this patient?

A) Prostate-specific antigen (PSA)
B) A bone density test
C) Abdominal ultrasonography
D) Low-dose chest CT
E) Carotid ultrasonography

183. A 63-year-old female with community-acquired pneumonia is being treated with appropriate antibiotics. The only abnormality on a basic metabolic panel is a serum sodium level of 121 mEq/L (N 135–145). She reports that her shortness of breath and cough are improving. She has no other complaints on a review of systems.

On examination the patient is noted to have normal vital signs and mucous membranes are moist. She has crackles in her right lower lobe. Skin turgor is normal. The remainder of the physical examination is normal. Further testing reveals the following:

Urine sodium	50 mEq/L
Serum osmolality	276 mOsm/kg (N 280–285)
Urine osmolality	300 mOsm/kg

Which one of the following would be most appropriate at this point?

A) Intravenous diuretics
B) Intravenous hypertonic saline
C) Intravenous isotonic saline
D) Fluid restriction
E) No further interventions

184. A 53-year-old female without risk factors for colorectal cancer undergoes a screening colonoscopy. A high-quality examination reveals five 3- to 7-mm sessile polyps in the sigmoid and rectal areas. Biopsy results show that they are hyperplastic polyps. No other abnormalities are noted.

When should this patient have her next colonoscopy?

A) 1 year
B) 3 years
C) 5 years
D) 10 years
E) No further colonoscopies are needed

185. Screening for chronic hepatitis B infection is NOT recommended for which one of the following?

A) Patients on chronic immunosuppressive therapy
B) Patients with end-stage renal disease who are on hemodialysis
C) Household contacts of individuals with chronic hepatitis B
D) Pregnant women with no risk factors for hepatitis B
E) All newborns

186. A 67-year-old male with moderate macrocytosis complains of paresthesias of his feet. If the patient has a borderline low vitamin B_{12} level, elevated levels of which one of the following would suggest vitamin B_{12} deficiency?

A) Serum gastrin
B) Reticulocytes
C) Methylmalonic acid
D) Serum ferritin
E) Serum folate

187. In the United States the most common form of child abuse is

A) physical abuse
B) emotional abuse
C) sexual abuse
D) neglect

188. A 65-year-old female presents to the emergency department as directed by her primary care physician because of "high potassium" that was found today during routine laboratory monitoring. The patient has a past medical history significant for diet-controlled diabetes mellitus, hypertension, and asthma. She feels well and specifically denies palpitations, fatigue, changes in urine output, and muscle cramps. You do not have access to the patient's outpatient medical records and order a chemistry panel in the emergency department with the following results:

Sodium	143 mEq/L (N 135–145)
Potassium	6.3 mEq/L (N 3.5–5.0)
CO_2	27 mEq/L (N 22–30)
Creatinine	1.6 mg/dL (N 0.6–1.0)
BUN	30 mg/dL (N 7–21)

Which one of the following is the first additional test that should be obtained in the diagnostic evaluation of this patient?

A) A urinalysis
B) A CBC
C) Arterial blood gases
D) An EKG
E) Renal ultrasonography

189. A 58-year-old male delivery truck driver is diagnosed with type 2 diabetes mellitus and after several months of working on lifestyle modification his hemoglobin A_{1c} is 8.0%. You suggest it is time to start a medication to help control his condition but he is very worried about having a "low sugar reaction" that would prevent him from driving. He is on no other medications at this time. His only other health problem is long-standing controlled hypertension. His BMI is 33.1 kg/m^2 and his serum creatinine level is 1.2 mg/dL (N 0.6–1.5).

Which one of the following medications would be least likely to cause hypoglycemia in this patient?

A) Canagliflozin (Invokana)
B) Glimepiride (Amaryl)
C) Glipizide (Glucotrol)
D) Insulin glargine (Lantus)
E) Metformin (Glucophage)

190. The most common carcinoma diagnosed in the United States is

A) colon adenocarcinoma
B) prostate carcinoma
C) breast carcinoma
D) basal cell carcinoma
E) malignant melanoma

191. The parents of a 5-year-old male bring him in for evaluation of likely attention deficit/hyperactivity disorder. You have suspected this diagnosis for some time, and the parents have brought in surveys filled out by themselves and the child's kindergarten teacher which confirm your suspicions.

The most appropriate initial treatment is

A) behavioral therapy
B) α_2-receptor agonists such as guanfacine (Intuniv, Tenex)
C) psychostimulants such as methylphenidate (Ritalin)
D) atomoxetine (Strattera)

192. Which one of the following is most characteristic of hoarding disorder?

A) Collecting eccentric or bizarre items
B) Collecting only seemingly worthless items
C) Deriving pleasure from collected items
D) Anxiety and emotional distress if collected items are disposed of

193. A 24-year-old female presents with a painless ulcer on her labia, which has been present for a week. You suspect primary syphilis, but a rapid plasma reagin (RPR) test is negative.

Which one of the following is the best strategy for confirming or ruling out syphilis in this situation?

A) A spinal fluid analysis
B) A serum fluorescent treponemal antibody absorption (FTA-ABS) test now
C) A Treponema pallidum particle agglutination (TPPA) test now
D) A Venereal Disease Research Laboratory (VDRL) test now
E) Repeating the RPR test in 2 weeks

194. A 53-year-old female with a past medical history of hypertension and high cholesterol presents to discuss options for tobacco cessation. She has a 30-pack-year history of smoking and currently smokes between 1 and 1½ packs per day. She tried varenicline (Chantix) but had nightmares while she was using it and does not want to try it again. Many of her family members have seizure disorders and she is therefore hesitant to try bupropion (Wellbutrin). She has used nicotine patches with minimal success.

Which one of the following pharmacotherapies would be most likely to help in her effort to stop smoking?

A) Fluoxetine (Prozac)
B) Naltrexone (ReVia)
C) Nortriptyline (Pamelor)
D) Selegiline (Eldepryl)
E) St. John's wort

195. The specificity of a screening test is best described as the proportion of persons

A) with the condition who test positive
B) with the condition who test negative
C) with the condition who test positive, compared to the total number screened
D) without the condition who test positive
E) without the condition who test negative

196. An 18-month-old previously healthy infant is admitted to the hospital with bronchiolitis. Pulse oximetry on admission is 92% on room air.

Which one of the following should be included in the management of this patient?

A) Tracheal suction to clear the lower airways
B) Nasal suction to clear the upper airway
C) Chest physiotherapy
D) Corticosteroids
E) Azithromycin (Zithromax)

197. Which one of the following is associated with bisphosphonate use for the treatment of osteoporosis?

A) Hypercalcemia
B) Hyperphosphatemia
C) Vitamin D deficiency
D) Atypical femoral shaft fractures
E) Renal failure

198. A 20-year-old male college student comes to the emergency department in January acutely short of breath and looking very ill, with tachypnea, tachycardia, nausea, and a headache. Pulse oximetry shows an oxygen saturation of 100% on room air, and arterial blood gas measurement shows a PaO_2 of 95 mm Hg.

Of the following, which one is the most likely diagnosis?

A) Carbon monoxide poisoning
B) Adult respiratory distress syndrome
C) Methemoglobinemia
D) Lobar pneumonia
E) Viral pneumonia

199. A 25-year-old gravida 1 para 1 presents for insertion of a levonorgestrel-releasing intrauterine device (Mirena). She is on the last day of her menses, which began 5 days ago. A urine pregnancy test in the office is negative. You insert the device without complications and she asks how long she needs to use backup contraception.

Which one of the following would be the most appropriate advice?

A) Backup contraception is not necessary
B) She should use backup contraception for the next 48 hours
C) She should use backup contraception for the next 7 days
D) She should use backup contraception for the next 14 days
E) She should use backup contraception for the next month

200. Which one of the following classes of diabetes medications increases the risk of genitourinary infections by blocking glucose reabsorption by the kidneys?

A) SGLT2 inhibitors such as canagliflozin (Invokana)
B) GLP-1 receptor agonists such as exenatide (Byetta)
C) DPP-4 inhibitors such as sitagliptin (Januvia)
D) Meglitinides such as repaglinide (Prandin)
E) α-Glucosidase inhibitors such as acarbose (Precose)

201. Which one of the following is first-line treatment for chronic Achilles tendinopathy?

A) NSAIDs
B) Bracing
C) Eccentric strengthening exercises
D) Corticosteroid injection
E) Therapeutic ultrasonography

202. A 69-year-old female presents with her first episode of Clostridium difficile colitis, which is characterized as severe. Which one of the following is the most appropriate initial therapy?

A) Oral metronidazole (Flagyl)
B) Intravenous metronidazole
C) Oral vancomycin (Vancocin)
D) Intravenous vancomycin
E) Rifaximin (Xifaxan)

203. Which one of the following is the most common cause of sudden cardiac death in young athletes?

A) Coronary artery abnormalities
B) Myocarditis
C) Hypertrophic cardiomyopathy
D) Brugada syndrome
E) Idiopathic left ventricular hypertrophy

204. A 44-year-old male is being evaluated for a 3-month history of cough. His chest radiograph is shown below.

Which one of the following abnormalities is seen on the radiograph?

A) Bronchiectasis
B) A pulmonary cavitary lesion
C) A hiatal hernia
D) A thoracic aortic aneurysm
E) Pericardial effusion

205. A 15-year-old male presents to the emergency department at 10 p.m. with a 2-hour history of severe, acute scrotal pain associated with vomiting. On examination the right testicle is swollen. Ultrasonography is inconclusive.

Which one of the following would be most appropriate at this point?

A) Repeat ultrasonography in the morning
B) Antibiotics
C) Corticosteroids
D) Scrotal support
E) Immediate surgical consultation

206. A 66-year-old female sees you for the first time. She has a history of iron deficiency anemia and chronic diarrhea associated with a diagnosis of celiac disease.

This history increases her risk for which one of the following?

A) Diverticulitis
B) Ulcerative colitis
C) Crohn's disease
D) Colon cancer
E) Osteoporosis

207. A 44-year-old female is brought to your office by her mother. The patient was in a severe car accident 2 weeks ago. Her husband was killed instantly and she was extracted by emergency responders almost an hour later. She received a full examination at a local emergency department and was discharged home with only minor contusions and abrasions and no evidence of a closed head injury.

The patient has been panicked and unable to sleep. She has recurrent flashbacks of the event and dreams repeatedly about her husband's death. She says that sometimes, even while awake, she can almost sense her husband's lifeless body near her. She has refused to get into a car since the accident, which is the reason she has not sought care sooner. She has not been able to focus on daily tasks but has been able to eat and drink adequate amounts.

Which one of the following diagnoses best describes her condition?

A) Acute stress disorder
B) Major depressive disorder
C) Obsessive-compulsive disorder
D) Panic disorder
E) Generalized anxiety disorder

208. You are covering the inpatient service and following up on a 67-year-old female admitted 3 days ago for severe pancreatitis. CT on admission showed edema and mild inflammation. Currently the patient is receiving intravenous fluids, daily laboratory evaluations, and pain medications. She is NPO and afebrile, with a blood pressure of 130/78 mm Hg and a pulse rate of 88 beats/min.

Which one of the following therapies should be initiated to lower complication rates and shorten the patient's hospital stay?

A) Enteral nutrition
B) Parenteral nutrition
C) Surgical debridement
D) Prophylactic antibiotics

209. A 30-year-old female complains of dysmenorrhea, pelvic pain, and dyspareunia. Which one of the following would be appropriate to detect endometriosis?

A) A CA-125 assay
B) Transvaginal ultrasonography
C) CT of the pelvis
D) MRI of the pelvis
E) Colonoscopy

210. The CDC has designated several diseases as neglected parasitic infections in the United States. Which one of these, if untreated, has potential consequences that include cardiomyopathy, heart failure, and fatal cardiac arrhythmias?

A) Trichomoniasis
B) American trypanosomiasis (Chagas disease)
C) Toxoplasmosis
D) Cysticercosis
E) Toxocariasis

211. A 30-year-old female stepped off a curb earlier today and twisted her left ankle. She was able to bear weight immediately following the injury and tried to continue her normal routine, but the pain in her ankle and foot increased over the next few hours.

She comes to your office and your examination reveals swelling of the ankle and bruising of the lateral foot. Tenderness to palpation is present over the distal aspect of the fibula and lateral malleolus and to a lesser degree over the proximal fifth metatarsal. No bony tenderness is present along the medial aspect of the ankle or foot.

According to the Ottawa Ankle Rules, which one of the following would be most appropriate at this point?

A) Radiographs of the ankle and foot
B) Radiographs of the foot only
C) Radiographs of the ankle only
D) No radiographs

212. A U.S. Preventive Services Task Force "D" recommendation indicates

A) high certainty that the net benefit is substantial
B) high certainty that the net benefit is moderate
C) moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits
D) that the decision to provide the service should be based on professional judgment and patient preferences
E) that current evidence is insufficient to assess the balance of benefits and harms of the service

213. According to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), the severity of anorexia nervosa is based on which one of the following?

A) Refusal to eat
B) The frequency of episodes of binge eating or purging behavior
C) Body mass index (BMI)
D) The presence or absence of amenorrhea
E) Orthostatic changes in pulse or blood pressure

214. A 29-year-old previously healthy male presents with a 1-hour history of the sudden onset of progressively worsening shortness of breath. On examination he has a blood pressure of 126/96 mm Hg, a heart rate of 110 beats/min, an oxygen saturation of 90%, and a respiratory rate of 24/min. A chest radiograph is shown below.

Which one of the following is the recommended treatment?

A) Observation
B) The Valsalva maneuver
C) Needle aspiration
D) Intravenous heparin
E) Intravenous methylprednisolone sodium succinate (Solu-Medrol)

215. Which one of the following comorbid conditions increases the risk that latent tuberculosis infection will progress to active disease?

A) Hypertension
B) Lung cancer
C) Obesity
D) Coronary artery disease
E) Hyperlipidemia

216. Which one of the following immunizations is indicated for all pregnant women at any stage of pregnancy?

A) MMR
B) Varicella
C) Influenza
D) HPV

217. A 24-year-old gravida 2 para 1 at 9 weeks gestation sees you for a routine prenatal check. She complains of significant nausea, and recommended dietary modifications have not helped. She drives a school bus so she would like to avoid sedating medications. She appears well-hydrated and her examination is otherwise normal.

Which one of the following would be best for relieving this patient's nausea?

A) Auricular acupressure
B) A scopolamine patch (Transderm Scop)
C) Vitamin B_6 (pyridoxine)
D) Methylprednisolone (Medrol)

218. A local dentist contacts you for a prescription for the appropriate antibiotic dosage for one of your patients who has an appointment for dental cleaning to eliminate a significant plaque buildup. The patient is a 55-year-old male who has controlled hypertension and mitral valve prolapse with mitral regurgitation. He is allergic to sulfonamides.

Which one of the following would be the most appropriate prophylaxis for this patient?

A) Amoxicillin, 2 g orally 1 hour prior to the procedure
B) Amoxicillin, 3 g orally 1 hour prior to the procedure and 1.5 g orally 6 hours after the procedure
C) Ceftriaxone (Rocephin), 1 g intramuscularly 1 hour prior to the procedure
D) Clindamycin (Cleocin), 600 mg orally 1 hour prior to the procedure
E) No antibiotic prophylaxis

219. A 40-year-old female sees you for a health maintenance visit. She has no complaints and other than being overweight she has an unremarkable examination. Laboratory results are also unremarkable except for her lipid profile. She has a total cholesterol level of 251 mg/dL, an HDL-cholesterol level of 31 mg/dL, and a triglyceride level of 1250 mg/dL. The LDL-cholesterol level could not be calculated and measured 145 mg/dL.

In addition to lifestyle changes, this patient would most likely benefit from

A) niacin
B) omega-3 fatty acid supplementation
C) atorvastatin (Lipitor)
D) ezetimibe (Zetia)
E) fenofibrate (Tricor)

220. A 57-year-old female with a past medical history significant for well-controlled type 2 diabetes mellitus, hypertension, and hyperthyroidism presents to your office with a chief complaint of a sore throat and a fever to 101.5°F at home. She has had chills and night sweats but has not had a cough, chest pain, or abdominal pain.

Physical Findings

General	ill appearing
HEENT	diffuse tender anterior cervical adenopathy; thyroid nontender; oropharynx erythematous with some purulence on her tonsils
Cardiovascular	tachycardia without murmur
Lungs	clear to auscultation bilaterally
Skin	mild jaundice

Laboratory Findings

Rapid strep test	negative
Total WBC count	$3000/mm^3$ (N 4500–11,000) and absolute neutrophil count 0
Total bilirubin	5 mg/dL (N 0–1.0)
Alkaline phosphatase	151 U/L (N 38–126)

Which one of the following medications is most likely to cause these laboratory abnormalities?

A) Amlodipine (Norvasc)
B) Aspirin
C) Metformin (Glucophage)
D) Methimazole (Tapazole)

221. A 31-year-old gravida 1 para 0 presents for a routine visit at 32 weeks gestation. She has gestational diabetes mellitus (GDM) and has been following the dietary guidelines from her dietitian. However, her blood glucose is still elevated and you discuss starting medications for management of her GDM. She is adamant about not starting insulin but is willing to consider taking metformin (Glucophage). Before making a decision she would like to know the specific benefits to her and her baby.

You would tell her that one benefit of treatment of GDM is a decreased risk for

A) maternal type 2 diabetes mellitus after delivery
B) maternal preeclampsia
C) perinatal death
D) a small-for-gestational-age infant

222. A 34-year-old white female sees you for a routine follow-up visit. She takes haloperidol, 2 mg after each meal, for schizophrenia, and you notice that she seems unable to sit still and is extremely anxious.

The most likely cause of her restlessness is

A) drug-induced parkinsonism
B) akathisia
C) tardive dyskinesia
D) hysteria
E) dystonia

223. A 45-year-old male is seen for a well-demarcated, nonpruritic rash in the right axilla. It is fine-scaled with a cigarette-paper appearance. The rash has a coral-red fluorescence under a Wood's light.

Which one of the following is the most likely diagnosis?

A) Candidiasis
B) Tinea cruris
C) Erythrasma
D) Inverse psoriasis

224. A 28-year-old female just delivered a male infant over an intact perineum. She has had polyhydramnios during this pregnancy, but her prenatal course has otherwise been normal. Her only significant chronic medical problem is asthma, treated with a long-acting β-agonist/corticosteroid combination inhaler. Vital signs were stable throughout her labor. After delivery of the placenta, bleeding becomes brisk and you note a soft, boggy, uterus.

Which one of the following medications is contraindicated in this patient?

A) Carboprost (Hemabate)
B) Methylergonovine
C) Misoprostol (Cytotec)
D) Oxytocin (Pitocin)

225. A 52-year-old male presents with a swollen and tender area anterior to the left ear and extending to below the left angle of the mandible. One week ago he had a Nissen fundoplication for intractable GERD. This was complicated by difficulty swallowing and drinking. On examination his tympanic temperature is 37.7°C (99.9°F), his blood pressure is 110/70 mm Hg, and his pulse rate is 95 beats/min and regular. His left parotid gland is diffusely enlarged and tender. Purulent material is noted coming from the left parotid duct orifice.

Which one of the following would be most appropriate at this point?

A) Amoxicillin/clavulanate (Augmentin)
B) Penicillin
C) CT of the parotid gland
D) Incision and drainage of the parotid gland
E) Excision of the parotid gland

226. A 3-week-old infant is brought to your office with a fever. He has a rectal temperature of 38.3°C (101.0°F), but does not appear toxic. The remainder of the examination is within normal limits.

Which one of the following would be the most appropriate management for this patient?

A) Admit to the hospital and obtain urine, blood, and CSF cultures, then start intravenous antibiotics
B) Admit to the hospital and treat for herpes simplex virus infection
C) Follow up in the office in 24 hours and admit to the hospital if not improved
D) Order a CBC and a urinalysis with culture, and send the patient home if the results are normal

227. A 70-year-old female presents to your office as a new patient. She is healthy and has no complaints. She walks for exercise 30–45 minutes daily and takes no prescription medications. Her blood pressure is 125/75 mm Hg, heart rate 72 beats/min, and respiratory rate 14/min.

On examination she has a systolic crescendo-decrescendo murmur heard loudest at the right upper sternal border. An EKG in the office is within normal limits. Echocardiography shows mild aortic stenosis based on peak aortic jet velocity, aortic valve area, and mean pressure gradient. Her ejection fraction is 55%. At a follow-up visit she states that she continues to be symptom free.

Which one of the following should be the next step in the evaluation and management of her aortic stenosis?

A) Exercise treadmill testing
B) Right heart catheterization
C) Repeat echocardiography in 3 years
D) Cardiothoracic surgery consultation
E) Initiation of statin therapy

228. A 79-year-old female had a total knee replacement yesterday. She has mild dementia as a result of a stroke 10 years ago, but her dementia has been stable since then. Last night she became confused and agitated, striking out at nurses, and could not be consoled.

Which one of the following would be most appropriate at this time?

A) Soft restraints
B) CT of the head
C) Adequate pain control
D) A sedating SSRI such as paroxetine (Paxil)
E) Lorazepam (Ativan) intravenously as needed

229. A 58-year-old male sees you for a physical examination so he can receive a commercial driver's license. On examination you note a 2-cm hard, nodular protuberance on his hard palate, shown below. He believes that this has been there for some time, but says it seems to be enlarging.

The most likely diagnosis is

A) osteoid osteoma
B) torus palatinus
C) mucocele
D) osteosarcoma
E) calcinosis cutis

230. Which one of the following is the best diagnostic test for vitamin D deficiency?

A) Ionized calcium
B) Serum phosphorus
C) 24-hour urine for calcium
D) 1,25-hydroxyvitamin D
E) 25-hydroxyvitamin D

231. A 31-year-old male has experienced multiple outbreaks of the rash shown below. He was initially told that the rash was due to an allergy to an antibiotic prescribed for a suspected dental abscess, but avoiding all medications has not prevented the recurrences.

Which one of the following oral medications has been shown to reduce the severity, duration, and recurrences of this type of rash?

A) Acyclovir
B) Cetirizine (Zyrtec)
C) Prednisone
D) Ranitidine (Zantac)
E) Terbinafine (Lamisil)

232. Which one of the following is the only medication that has consistent evidence for decreasing depressive symptoms in children and adolescents?

A) Fluoxetine (Prozac)
B) Venlafaxine (Effexor XR)
C) Nortriptyline (Pamelor)
D) Aripiprazole (Abilify)
E) Paroxetine (Paxil)

233. Which one of the following, especially in homeless people, is a vector for Bartonella quintana, which causes trench fever, an influenza-like syndrome with relapsing fever?

A) Fleas
B) Maggots
C) Bedbugs
D) Scabies
E) Lice

234. A 72-year-old previously healthy female comes in for evaluation of recent headaches. She describes the pain as generalized all over her head and persisting over the past several months. She reports feeling more achy and fatigued in the past several weeks, with a decreased appetite and unintentional weight loss of 4 lb in the past 2 months. She denies any other symptoms including sinus congestion, nausea, vomiting, numbness, tingling, weakness, or vision changes. Acetaminophen has been minimally helpful for the pain.

On examination you note a temperature of 37.9°C (100.2°F), normal cranial nerves, a normal eye examination, and no tenderness to palpation of the head. She is mildly tender to palpation of the shoulders and upper arms. Laboratory testing reveals an erythrocyte sedimentation rate of 88 mm/hr (N 1–25).

Which one of the following is necessary to confirm the most likely diagnosis?

A) EEG
B) CT of the head
C) MRI of the head
D) A temporal artery biopsy
E) A lumbar puncture

235. A 3-year-old male is brought to the urgent-care clinic on a Monday morning by his mother with a 1-day history of complaining of ear pain. The child's mother says she has not noticed any fever during this time. He is up to date on all immunizations and has no previous history of ear infections or history of recent illness. The history is negative for medication allergies.

On examination the child has a temperature of 38.2°C (100.8°F) and seems to be uncomfortable. When you examine his ears you note moderate bulging of the tympanic membrane in both ears. All other findings are normal.

According to the guidelines published by the American Academy of Pediatrics, which one of the following would be the most appropriate initial management?

A) Amoxicillin, 40–50 mg/kg, for 10 days
B) Amoxicillin, 80–90 mg/kg, for 10 days
C) Amoxicillin/clavulanate (Augmentin), 90 mg/kg/day of amoxicillin and 6.4 mg/kg/day of clavulanate, divided into two doses, for 7 days
D) Cefdinir, 14 mg/kg/day for 10 days
E) Ciprofloxacin (Cipro), 10–20 mg/kg for 7 days

236. A 20-year-old male with a history of exercise-induced bronchoconstriction presents to your office with a complaint of cough and decreasing performance when he runs. He is training for a marathon and is currently running 30 miles/week, but has noted that his times have been worsening and that he is using his albuterol inhaler (Proventil, Ventolin) as needed for symptom relief 5 days a week.

Which one of the following is the best regimen for treatment of this condition?

A) Inhaled albuterol before he runs
B) A daily low-dose inhaled corticosteroid
C) A daily inhaled long-acting β_2-agonist
D) A daily low-dose oral corticosteroid
E) Immunotherapy

237. A 44-year-old obese female complains of intermittent right upper quadrant pain that is worse after fatty meals. Which one of the following is the preferred initial imaging modality for evaluating her complaint and confirming the diagnosis?

A) A plain radiograph
B) Ultrasonography
C) Cholescintigraphy
D) Contrast-enhanced CT
E) Contrast-enhanced MRI

238. A 52-year-old healthy male presents with a 2½-week history of diarrhea, consisting of 4–6 watery stools daily. He is afebrile and his examination is normal. You recommend symptomatic care. Two days later the laboratory notifies you that Salmonella is growing in his stool culture. You call the patient and he remains free of fever but with ongoing diarrhea.

Which one of the following would you recommend?

A) Azithromycin (Zithromax)
B) Ciprofloxacin (Cipro)
C) Clindamycin (Cleocin)
D) Doxycycline
E) No treatment

239. A mother brings her 5-year-old daughter to see you because she found a mass in the child's neck. The mass appeared over the past week and was preceded by a sore throat. Her pharyngitis is now resolved but she still has a fever, although it is not as high. The mother is most concerned because the mass developed over a short span of time, and it is warm, red, and tender. When asked, she says that her daughter has had no recent exposure to cats.

When you examine the child you note that her temperature is 38.0°C (100.4°F). You also find shotty adenopathy in both anterior cervical lymph node chains, and a 2.5-cm warm, firm, moderately tender lymph node in the right anterior cervical chain. The overlying skin is also erythematous.

Which one of the following would be the most appropriate management at this time?

A) Ultrasonography of the neck mass
B) CT with intravenous contrast of the neck mass
C) Ultrasound-guided fine-needle aspiration of the mass
D) Immediate referral to a head and neck surgeon
E) Empiric antibiotic therapy with observation for 4 weeks

240. A 45-year-old male with diabetes mellitus returns to your office for follow-up. He is on metformin (Glucophage), 1000 mg/day, as well as atorvastatin (Lipitor), 40 mg daily for hyperlipidemia. There is no diagnosis of hypertension, and his blood pressure at today's visit is 120/70 mm Hg. Laboratory results include a hemoglobin A_{1c} of 6.4% and an LDL-cholesterol level of 105 mg/dL. His urine albumin/creatinine ratio is in the microalbuminuric range for the first time.

Which one of the following would be most appropriate at this point?

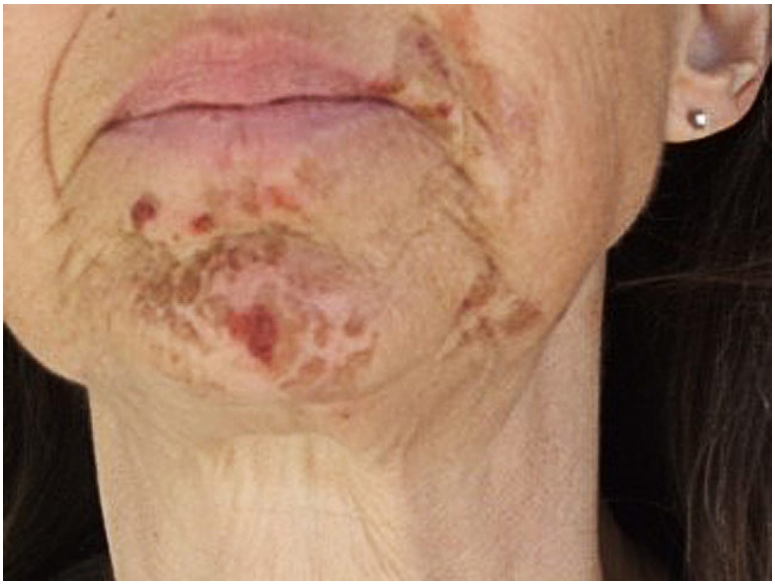
A) Renal ultrasonography
B) A repeat urine albumin/creatinine ratio
C) 24-hour urine for microalbumin
D) Increasing the atorvastatin dosage
E) Stopping metformin

American Board of Family Medicine

2015 IN-TRAINING EXAMINATION

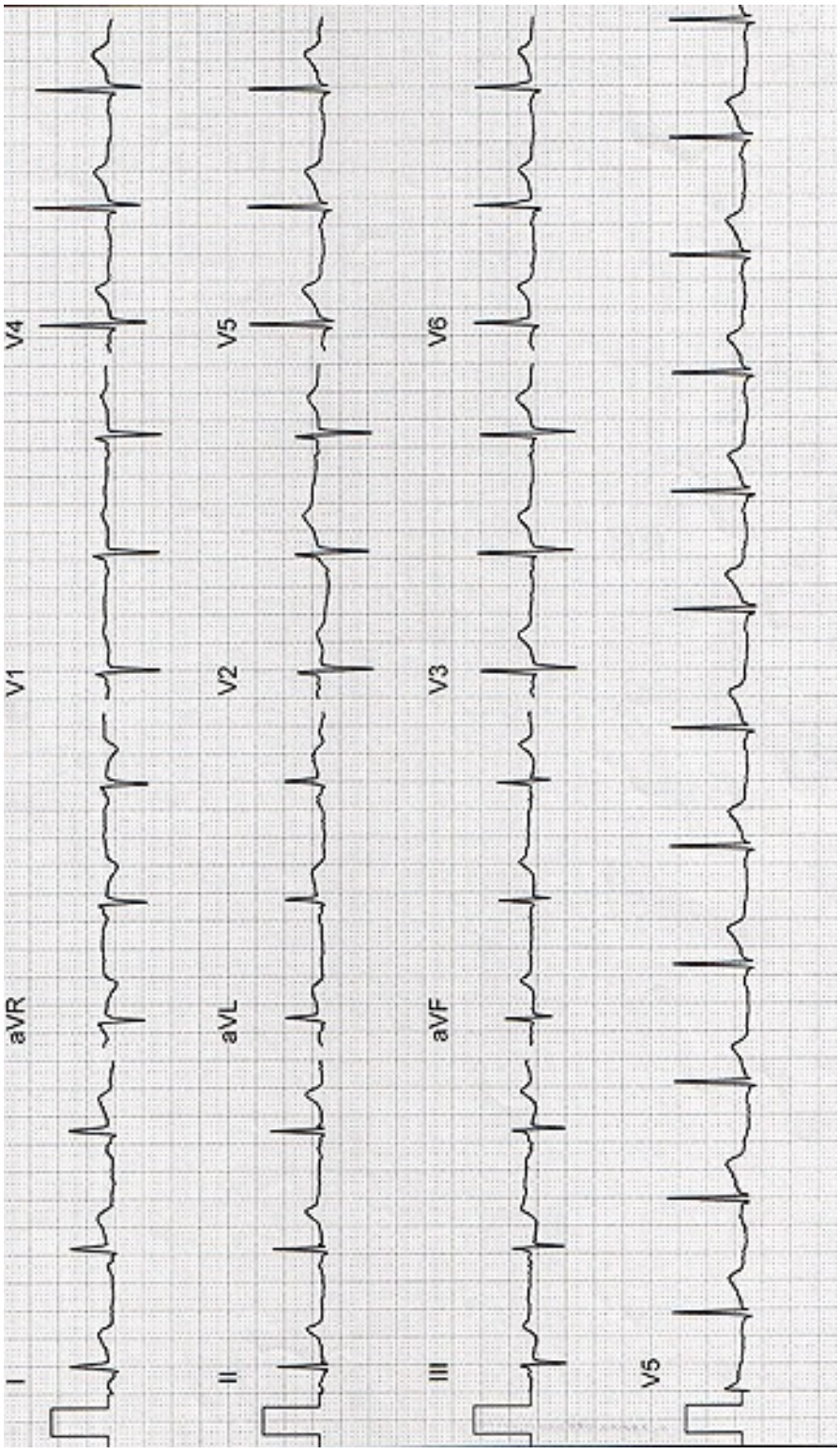
PICTORIAL ATLAS

Item #88



Item #171

Item #178



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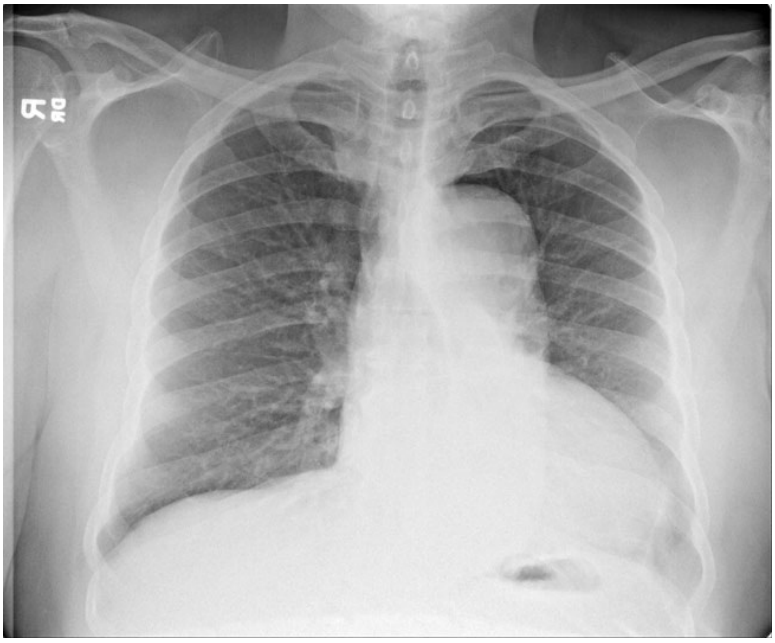
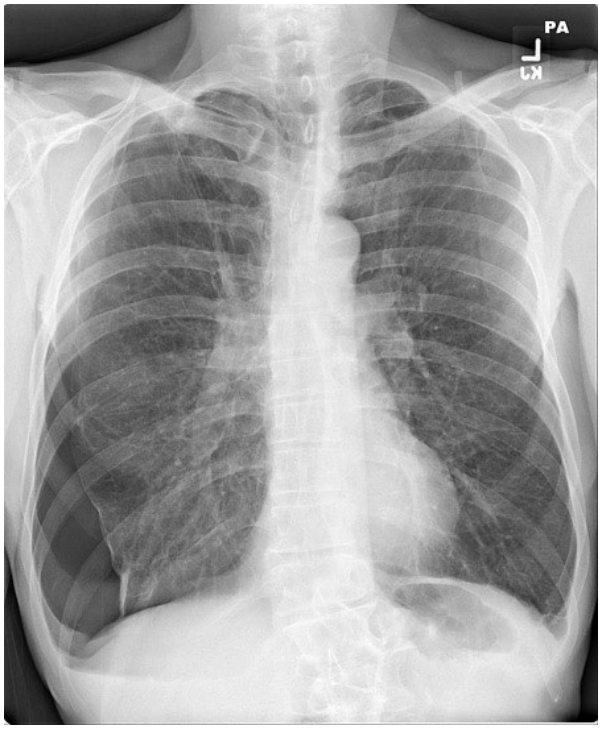
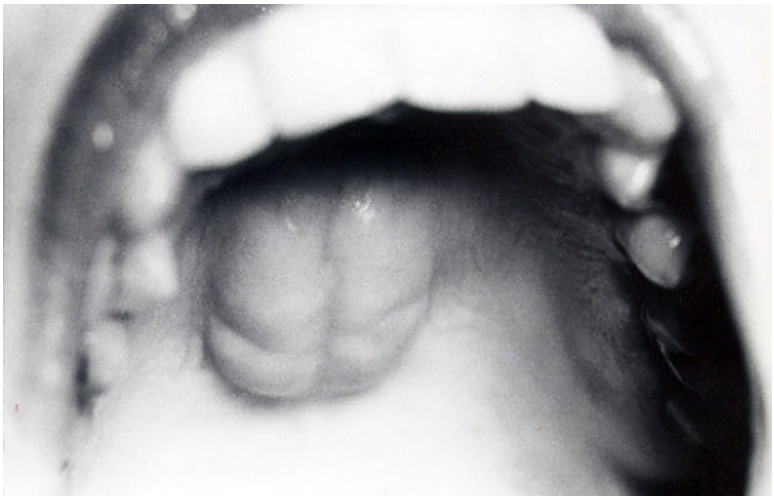


Item #204



Item #214



Item #229

Item #231

American Board of Family Medicine

2015 IN-TRAINING EXAMINATION

CRITIQUE BOOK

This book contains the answers to each question in the In-Training Examination, as well as a critique that provides a rationale for the correct answer. Bibliographic references are included at the end of each critique to facilitate any further study you may wish to do in a particular area.

Item 1

ANSWER: B

Chlamydial pneumonia is usually seen in infants 3–16 weeks of age, and these patients frequently have been sick for several weeks. The infant appears nontoxic and is afebrile, but is tachypneic with a prominent cough. The physical examination will reveal diffuse crackles with few wheezes, and conjunctivitis is present in about 50% of cases. A chest film will show hyperinflation and diffuse interstitial or patchy infiltrates.

Staphylococcal pneumonia has a sudden onset. The infant appears very ill and has a fever, and initially may have an expiratory wheeze simulating bronchiolitis. Signs of abdominal distress, tachypnea, dyspnea, and localized or diffuse bronchopneumonia or lobar disease may be present. The WBC count will show a prominent leukocytosis.

Respiratory syncytial virus infections start with rhinorrhea and pharyngitis, followed in 1–3 days by a cough and wheezing. Auscultation of the lungs will reveal diffuse rhonchi, fine crackles, and wheezes, but the chest film is often normal. If the illness progresses, coughing and wheezing increase, air hunger and intercostal retractions develop, and evidence of hyperexpansion of the chest is seen. In some infants the course of the illness may be similar to that of pneumonia. Rash or conjunctivitis may occur occasionally, and fever is an inconsistent sign. The WBC count will be normal or elevated, and the differential may be normal or shifted either to the right or left. Chlamydial infections can be differentiated from respiratory syncytial virus infections by a history of conjunctivitis, the subacute onset and absence of fever, and the mild wheezing. There may also be eosinophilia.

Parainfluenza virus infection presents with typical cold symptoms. Eight percent of infections affect the upper respiratory tract. In children hospitalized for severe respiratory illness, parainfluenza viruses account for about 50% of the cases of laryngotracheitis and about 15% each of the cases of bronchitis, bronchiolitis, and pneumonia.

Ref: Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, p 1037. 2) Mishori R, McClaskey EL, WinklerPrins VJ: Chlamydia trachomatis infections: Screening, diagnosis, and management. Am Fam Physician 2012;86(12):1127-1132.

Item 2

ANSWER: C

This patient has polycystic ovary syndrome, which is characterized by hyperandrogenism on clinical and laboratory evaluations, polycystic ovaries on pelvic ultrasonography, and ovulatory dysfunction. Hyperandrogenism and either polycystic ovaries or ovulatory dysfunction are necessary to make the diagnosis. The first-line recommendation in obese patients is lifestyle modification, but metformin may improve abnormal menstruation (SOR A). Low-dose combined oral contraceptives are more frequently used to reduce the risk of endometrial cancer in patients with chronic anovulation and the resulting unopposed estrogen secretion. This patient does not have thyroid dysfunction, so levothyroxine is not indicated.

Ref: Master-Hunter T, Heiman DL: Amenorrhea: Evaluation and treatment. Am Fam Physician 2006;73(8):1374-1382. 2) Klein DA, Poth MA: Amenorrhea: An approach to diagnosis and management. Am Fam Physician 2013;87(11):781-788.

Item 3

ANSWER: B

The recommended treatment for a mallet fracture is splinting the distal interphalangeal (DIP) joint in extension (SOR B). The usual duration of splinting is 8 weeks. It is important that extension be maintained throughout the duration of treatment because flexion can affect healing and prolong the time needed for treatment. If the finger fracture involves >30% of the intra-articular surface, referral to a hand or orthopedic surgeon can be considered. However, conservative therapy appears to have outcomes similar to those of surgical treatment and therefore is generally preferred.

Ref: Borchers JR, Best TM: Common finger fractures and dislocations. Am Fam Physician 2012;85(8):805-810.

Item 4

ANSWER: A

Lithium, valproate, lamotrigine, and some antipsychotics (including quetiapine) are effective treatments for both acute depression and maintenance therapy of bipolar disorders. Haloperidol is an effective treatment for acute mania in bipolar disorders, but not for maintenance therapy or acute depression.

Ref: Price AL, Marzani-Nissen GR: Bipolar disorders: A review. Am Fam Physician 2012;85(5):483-493.

Item 5

ANSWER: D

This patient has physical findings consistent with a necrotizing skin and soft-tissue infection, or necrotizing fasciitis. Severe pain and skin changes outside the realm of cellulitis, including bullae and deeper discoloration, are strong indications of necrotizing fasciitis. Antimicrobial therapy is essential but is not sufficient by itself; aggressive surgical debridement within 12 hours reduces the risk of amputation and death.

Ref: Headley AJ: Necrotizing soft tissue infections: A primary care review. Am Fam Physician 2003;68(2):323-328. 2) Usatine RP, Sandy N: Dermatologic emergencies. Am Fam Physician 2010;82(7):773-780.

Item 6

ANSWER: E

Patients on amiodarone can develop either hyperthyroidism or hypothyroidism. It is recommended that a patient on amiodarone have baseline thyroid function tests (free T_4, TSH) with follow-up testing every 6 months to monitor for these conditions. Hyperadrenalism and hypoadrenalism are not associated with amiodarone treatment.

Ref: Siddoway LA: Amiodarone: Guidelines for use and monitoring. Am Fam Physician 2003;68(11):2189-2196. 2) Vassallo P, Trohman RG: Prescribing amiodarone: An evidence-based review of clinical indications. JAMA 2007;298(11):1312-1322. 3) Goldschlager N, Epstein AE, Naccarelli GV, et al: A practical guide for clinicians who treat patients with amiodarone: 2007. Heart Rhythm 2007;4(9):1250-1259. 4) Padmanabhan H: Amiodarone and thyroid dysfunction. South Med J 2010;103(9):922-930.

Item 7

ANSWER: D

Radial head subluxation, or nursemaid's elbow, is the most common orthopedic condition of the elbow in children 1–4 years of age, although it can be encountered before 1 year of age and in children as old as 9 years of age. The mechanism of injury is partial displacement of the radial head when the child's arm undergoes axial traction while in a pronated and fully extended position. The classic history includes a caregiver picking up (or pulling) a toddler by the arm. In half of all cases, however, no inciting event is recalled.

As long as there are no outward signs of fracture or abuse it is considered safe and appropriate to attempt reduction of the radial head before moving on to imaging studies. With the child's elbow in 90° of flexion, the hand is fully supinated by the examiner and the elbow is then brought into full flexion. Usually the child will begin to use the affected arm again within a couple of minutes. If ecchymosis, significant swelling, or pain away from the joint is present, or if symptoms do not improve after attempts at reduction, then a plain radiograph is recommended.

Ref: Sarwark JF (ed): Essentials of Musculoskeletal Care, ed 4. American Academy of Orthopaedic Surgeons, 2010, p 1004. 2) Marx JA, Hockberger RS, Walls RM (eds): Rosen's Emergency Medicine: Concepts and Clinical Practice, ed 8. Elsevier Saunders, 2013, pp 596-617. 3) Irie T, Sono T, Hayama Y, et al: Investigation on 2331 cases of pulled elbow over the last 10 years. Pediatr Rep 2014;6(2):5090.

Item 8

ANSWER: A

This patient has moderate persistent asthma. Although many parents are concerned about corticosteroid use in children with open growth plates, inhaled corticosteroids have not been proven to prematurely close growth plates and are the most effective treatment with the least side effects. Scheduled use of a short-acting bronchodilator has been shown to cause tachyphylaxis, and is not recommended. The same is true for long-acting bronchodilators. Leukotriene use may be beneficial, but compared to those using inhaled corticosteroids, patients using leukotrienes are 65% more likely to have an exacerbation requiring systemic corticosteroids.

Ref: Scow DT, Luttermoser GK, Dickerson KS: Leukotriene inhibitors in the treatment of allergy and asthma. Am Fam Physician 2007;75(1):65-70. 2) Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. National Asthma Education and Prevention Program, 2007, pp 74, 328-339. 3) Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, pp 791-796.

Item 9

ANSWER: E

The first-line treatment for primary dysmenorrhea should be NSAIDs (SOR A). They should be started at the onset of menses and continued for the first 1–2 days of the menstrual cycle. Combined oral contraceptives may be effective for primary dysmenorrhea, but there is a lack of high-quality randomized, controlled trials demonstrating pain improvement (SOR B). They may be a good choice if the patient also desires contraception. Although combined oral contraceptives and intramuscular and subcutaneous

progestin-only contraceptives are effective treatments for dysmenorrhea caused by endometriosis, they are not first-line therapy for primary dysmenorrhea.

Ref: Osayande AS, Mehulic S: Diagnosis and initial management of dysmenorrhea. Am Fam Physician 2014;89(5):341-346.

Item 10

ANSWER: C

Thyroid nodules >1 cm that are discovered incidentally on examination or imaging studies merit further evaluation. Nodules <1 cm should also be fully evaluated when found in patients with a family history of thyroid cancer, a personal history of head and neck irradiation, or a finding of cervical node enlargement. Reasonable first steps include measurement of TSH or ultrasound examination. The American Thyroid Association's guidelines recommend that TSH be the initial evaluation (SOR A) and that this be followed by a radionuclide thyroid scan if results are abnormal. Diagnostic ultrasonography is recommended for all patients with a suspected thyroid nodule, a nodular goiter, or a nodule found incidentally on another imaging study (SOR A). Routine measurement of serum thyroglobulin or calcitonin levels is not currently recommended.

Ref: American Thyroid Association (ATA) Guidelines Taskforce on Thyroid Nodules and Differentiated Thyroid Cancer, Cooper DS, Doherty GM, et al: Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. Thyroid 2009;19(11):1167-1214.

Item 11

ANSWER: C

Lamotrigine is an anti-epileptic medication that is often used in bipolar disorder. It can cause Stevens-Johnson syndrome, which is a severe disorder of the skin and mucous membranes. This most commonly occurs in children or when the drug is initiated at a high dosage, and is also more likely to occur in patients taking divalproex. To decrease the risk of Stevens-Johnson syndrome, it is recommended that lamotrigine therapy be started at a dosage of 25 mg daily and titrated every 2 weeks until the goal dosage is reached.

Ref: Brenner CJ, Shyn SI: Diagnosis and management of bipolar disorder in primary care: A DSM-5 update. Med Clin North Am 2014;98(5):1025-1048.

Item 12

ANSWER: A

The occurrence of two or more laboratory-confirmed cases of influenza A is considered an outbreak in a long-term care facility. The CDC has specific recommendations for managing an outbreak, which include chemoprophylaxis with an appropriate medication for all residents who are asymptomatic and treatment for all residents who are symptomatic, regardless of laboratory confirmation of infection or vaccination status. All staff should be considered for chemoprophylaxis regardless of whether they have had direct patient contact with an infected resident or have received the vaccine. Requesting restriction of visitation is recommended; however, it cannot be strictly enforced due to residents' rights.

Ref: Fiore AE, Fry A, Shay D, et al: Antiviral agents for the treatment and chemoprophylaxis of influenza—Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2011;60(1):1-24.

Item 13

ANSWER: A

In general, the strongest evidence for treatment, screening, or prevention strategies is found in systematic reviews, meta-analyses, randomized controlled trials (RCTs) with consistent findings, or a single high-quality RCT. Second-tier levels of evidence include poorer quality RCTs with inconsistent findings, cohort studies, or case-control studies. The lowest quality of evidence comes from sources such as expert opinion, consensus guidelines, or usual practice recommendations.

Ref: Ebell MH, Siwek J, Weiss BD, et al: Strength of recommendation taxonomy (SORT): A patient-centered approach to grading evidence in the medical literature. Am Fam Physician 2004;69(3):548-556. 2) Kasper DL, Fauci AS, Hauser SL, et al (eds): Harrison's Principles of Internal Medicine, ed 19. McGraw-Hill, 2015, pp 24-26.

Item 14

ANSWER: E

This infant has findings consistent with erythema toxicum neonatorum, which usually resolves in the first week or two of life (SOR A). No testing is usually necessary because of the distinct appearance of the lesions. The cause is unknown.

Ref: Lewis ML: A comprehensive newborn exam: Part II. Skin, trunk, extremities, neurologic. Am Fam Physician 2014;90(5):297-302.

Item 15

ANSWER: B

The American Urological Association guidelines define asymptomatic microscopic hematuria (AMH) as ≥3 RBCs/hpf on a properly collected urine specimen in the absence of an obvious benign cause (SOR C). A positive dipstick does not define AMH, and evaluation should be based solely on findings from microscopic examination of urinary sediment and not on a dipstick reading. A positive dipstick reading merits microscopic examination to confirm or refute the diagnosis of AMH.

Ref: Davis R, Jones JS, Barocas DA, et al: Diagnosis, evaluation and follow-up of asymptomatic microhematuria (AMH) in adults: AUA guideline. J Urol 2012;188(6 Suppl):2473-2481.

Item 16

ANSWER: A

Dyspnea is a frequent and distressing symptom in terminally ill patients. In the absence of hypoxia, oxygen is not likely to be helpful. Opiates are the mainstay of symptomatic treatment and other measures may be appropriate in specific circumstances. For example, inhaled bronchodilators or glucocorticoids may be helpful in patients with COPD, and diuresis may be helpful in patients with heart failure. The evidence for oxygen in patients with hypoxemia is not clear, but there is no benefit from oxygen for nonhypoxemic patients.

Ref: Ekström MP, Abernethy AP, Currow DC: The management of chronic breathlessness in patients with advanced and terminal illness. BMJ 2015;349:g7617. 2) Kasper DL, Fauci AS, Hauser SL, et al (eds): Harrison's Principles of Internal Medicine, ed 19. McGraw-Hill, 2015, p 62.

Item 17

ANSWER: B

A number of medications can cause or exacerbate prolonged QT syndrome, which can lead to torsades de pointes. This can be associated with syncope or degenerate into a sustained ventricular tachycardia or ventricular fibrillation. Clarithromycin interferes with the delayed rectifier potassium current, which results in the accumulation of potassium ions in cardiac myocytes and thereby delays cardiac repolarization. This leads to prolongation of the QT interval and therefore the risk of fatal arrhythmia. Clarithromycin is metabolized by the cytochrome P450 3A enzyme. When using clarithromycin it is important to avoid any other medications that may inhibit this enzyme, leading to higher clarithromycin levels. The other antibiotics listed do not have this effect.

Ref: Zipes DP, Jalife J (eds): Cardiac Electrophysiology: From Cell to Bedside, ed 6. Elsevier Saunders, 2014, pp 1001-1008. 2) Svanström H, Pasternak B, Hviid A: Use of clarithromycin and roxithromycin and risk of cardiac death: Cohort study. BMJ 2014;349:g4930.

Item 18

ANSWER: B

Inhaled corticosteroids increase the risk of bruising, candidal infection of the oropharynx, and pneumonia. They also have the potential for increasing bone loss and fractures. They decrease the risk of COPD exacerbations but have no benefit on mortality and do not improve FEV_1 on a consistent basis.

Ref: Hamilton T, Miller JB, Vincent EC, St Anna L: What are the benefits and risks of inhaled corticosteroids for COPD? J Fam Pract 2014;63(5):276-278.

Item 19

ANSWER: B

Depression affects up to 9% of U.S. patients and can cause significant disability. The U.S. Preventive Services Task Force recommends screening for depression in adults in practices that have systems in place to ensure accurate diagnosis and treatment with follow–up. Brief validated depression screening tools are readily available to assist in the diagnosis of depressed patients.

In his history, this patient gave the equivalent of positive answers to the two-question Patient Health Questionnaire (PHQ-2), a screening instrument that is specific for depression. In other words, depression can be ruled out when the responses are negative. Because the PHQ-2 questions are positive in this patient, the next step is confirmation with the PHQ-9, a questionnaire that includes the two questions in the PHQ-2 plus seven additional questions.

Cardiovascular testing may be indicated in the future for this patient, but not for these symptoms. The patient's sleep disturbance, viewed in the context of his other depressive symptoms and positive PHQ-2, is not likely to be due to a sleep disorder, so polysomnography is not indicated at this point. Untreated depression is associated with worse outcomes in coronary artery disease, so postponing further evaluation would be inappropriate for this patient.

Ref: US Preventive Services Task Force: Screening for depression in adults: US Preventive Services Task Force Recommendation Statement. Ann Intern Med 2009;151(11):784-792. 2) Maurer DM: Screening for depression. Am Fam Physician 2012;85(2):139-144.

Item 20

ANSWER: E

This patient has benign nocturnal limb pains of childhood (previously known as "growing pains"). These crampy pains often occur in the thigh, calf, or shin, occur in up to 35% of children 4–6 years of age, and may continue up to age 19. The pathology of these pains is unknown. The pain is nocturnal, without limping or other signs of inflammatory processes. The erythrocyte sedimentation rate and CBC are normal in this condition but testing is indicated in patients with chronic joint pain to rule out malignancy or infection (SOR C). Rheumatoid factor and ANA have a low predictive value in primary care settings and are not indicated in the pediatric population without evidence of an inflammatory process (SOR C). Plain radiographs are more useful for excluding certain conditions such as cancer than for making a diagnosis of arthritis in children (SOR C). Reassurance of the parents is indicated in this situation, along with instruction on supportive care and over-the-counter analgesics as necessary.

Ref: Junnila JL, Cartwright VW: Chronic musculoskeletal pain in children: Part I. Initial evaluation. Am Fam Physician 2006;74(1):115-122. 2) Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, p 878.

Item 21

ANSWER: D

In 2014 new evidence-based guidelines for blood pressure management were published by the panel members of the Eighth Joint National Committee (JNC 8). They looked only at randomized, controlled trials that compared one class of antihypertensive agent to another to develop the treatment recommendations. ACE inhibitors, angiotensin receptor blockers (ARBs), calcium channel blockers, and thiazide-type diuretics all yielded comparable effects on overall mortality and cardiovascular, cerebrovascular, and kidney outcomes. They are all recommended for initial treatment of high blood pressure in the nonblack population, including patients with diabetes mellitus. β-Blockers were not recommended for the initial treatment of hypertension because one study found there was a higher rate of the primary composite outcome of cardiovascular death, myocardial infarction, or stroke with use of these drugs compared to the use of an ARB.

Ref: James PA, Oparil S, Carter BL, et al: 2014 evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 2014;311(5):507-520.

Item 22

ANSWER: C

This patient has characteristic features of polymyalgia rheumatica, a disease whose prevalence increases with age in older adults but is almost never seen before age 50. Most people will have accompanying systemic symptoms including fatigue, weight loss, low-grade fever, a decline in appetite, and depression. There are no validated diagnostic criteria available to assist in the diagnosis. The treatment response to 15 mg of prednisone daily is dramatic, often within 24–48 hours, and if this response is not seen, alternative diagnoses must be considered. NSAIDs are not useful in the management of polymyalgia rheumatica and, in fact, are associated with high drug morbidity. Ultrasonography may be useful in making the diagnosis, with typical findings of subdeltoid bursitis and tendon synovitis of the shoulders, but synovitis of the glenohumeral joint is less common.

Ref: Michet CJ, Matteson EL: Polymyalgia rheumatica. BMJ 2008;336(7647):765-769. 2) Weyand CM, Goronzy JJ: Giant-cell arteritis and polymyalgia rheumatica. N Engl J Med 2014;371(1):50-57.

Item 23

ANSWER: E

In patients who are euvolemic but have hyponatremia, decreased serum osmolality, and elevated urine osmolality, the syndrome of inappropriate secretion of antidiuretic hormone (SIADH) is likely. Other causes to rule out include thyroid disorders, adrenal insufficiency, and diuretic use. Renal function has to be normal as well. Common drugs that cause SIADH include SSRIs (particularly in patients over 65), chlorpropamide, barbiturates, carbamazepine, opioids, tolbutamide, vincristine, diuretics, and NSAIDs. Treatment of the problem consists of discontinuing the offending drug. Temporary fluid restriction may also be required.

Ref: Braun MM, Barstow CH, Pyzocha NJ: Diagnosis and management of sodium disorders: Hyponatremia and hypernatremia. Am Fam Physician 2015;91(5):299-307.

Item 24

ANSWER: E

Although the American Academy of Family Physicians (AAFP) states that physicians are not compelled to perform any act that violates their moral principles, the AAFP also states that physicians do have a responsibility to provide resources on how to access a safe and legal abortion for women who are considering that option. Induced abortion is safer than live childbirth. Between 1998 and 2005 in the United States, mortality was 8.8 per 100,000 live births among women who delivered live neonates and 0.6 per 100,000 abortions among women who had legal abortions. Physicians should not broker adoptions, either by matching pregnant women with prospective parents or by offering to adopt children from their patients. Physicians should also not advocate or argue their personal moral position to patients. Conscientious refusal does not excuse a physician from providing appropriate medical care, including providing unbiased, medically accurate information regarding options and either having a referral process for transfer of care or identifying resources where such information can be obtained.

Ref: Moss DA, Snyder MJ, Lu L: Options for women with unintended pregnancy. Am Fam Physician 2015;91(8):544-549.

Item 25

ANSWER: E

This patient has a severe diabetic foot ulcer. It appears to be infected and there are signs of a systemic inflammatory response. This is an indication for intravenous antibiotics. Piperacillin/tazobactam and vancomycin would be the most appropriate choice of antibiotics because together they cover the most common pathogens in diabetic foot ulcers, as well as MRSA, which is present in 10%–32% of diabetic foot ulcers. This patient has recently been hospitalized and would thus be at high risk for a MRSA infection. Moderate to severe diabetic foot ulcers are often polymicrobial and can include gram-positive cocci, gram-negative bacilli, and anaerobic pathogens.

Ref: Gemechu FW, Seemant F, Curley CA: Diabetic foot infections. Am Fam Physician 2013;88(3):177-184.

Item 26

ANSWER: A

Unintentional injuries account for 40% of childhood deaths. Motor vehicle accidents are the most frequent cause of these deaths (58.2% of unintentional deaths). The proper use of child restraints is the most effective way to prevent injury or death, and the American Academy of Family Physicians and the American Academy of Pediatrics strongly recommend that physicians actively promote the proper use of motor vehicle restraints for all patients. Drowning accounts for 10.9% of all unintentional deaths in children, poisoning for 7.7%, fires 5.7%, and falls 1.4%.

Ref: Theurer WM, Bhavsar AK: Prevention of unintentional childhood injury. Am Fam Physician 2013;87(7):502-509.

Item 27

ANSWER: E

Based on the results of pulmonary function testing, this patient has a pure restrictive pattern with a low diffusing capacity for carbon monoxide. Pulmonary fibrosis is compatible with this pattern. A patient with any of the other listed diagnoses would be expected to have an obstructive pattern on testing.

Ref: Johnson JD, Theurer WM: A stepwise approach to the interpretation of pulmonary function tests. Am Fam Physician 2014;89(5):359-366.

Item 28

ANSWER: D

Patients with acute pericarditis should be treated empirically with colchicine and/or NSAIDs for the first episode of mild to moderate pericarditis. β-Blockers would only be appropriate if the cause of the patient's chest pain were an infarction or ischemia. Nitrates do not relieve the pain of pericarditis. Glucocorticoids are typically reserved for use in patients with severe or refractory cases or in cases where the likely cause of the pericarditis is connective tissue disease, autoreactivity, or uremia (SOR C).

Ref: Snyder MJ, Bepko J, White M: Acute pericarditis: Diagnosis and management. Am Fam Physician 2014;89(7):553-560.

Item 29

ANSWER: B

The recommended terminology for weight classification in children is based on age and either BMI (for children ages 2–18 years) or weight-for-length ratio (for children ages 0–2 years). Children under the age of 2 years are identified as being overweight when their weight-for-length ratio exceeds the 95th percentile for their sex. The term obese is not used for children under the age of 2 years. Children age 2–18 years are appropriately classified as underweight when their BMI falls below the 5th percentile, healthy weight when their BMI is between the 5th and 85th percentile, overweight when their BMI is between the 85th and 94th percentile, and obese when their BMI is in the 95th or greater percentile. There is currently no standard definition of childhood morbid obesity, but obesity is sometimes classified as severe or extreme when a child's BMI is at the 99th percentile or greater.

Ref: Division of Nutrition, Physical Activity and Obesity, National Center for Chronic Disease Prevention and Health Promotion: Basics about childhood obesity. Centers for Disease Control and Prevention, 2012. 2) Fitch A, Fox C, Bauerly K, et al: Prevention and Management of Obesity for Children and Adolescents. Institute for Clinical Systems Improvement, 2013.

Item 30

ANSWER: E

Primary amenorrhea is defined as a history of no menses in a female 13 years of age or older with no pubertal development, or 5 years after initial breast development, or in a patient older than 15 years. Primary amenorrhea is typically due to chromosomal problems that lead to primary ovarian insufficiency or anatomic abnormalities. If the patient has dysmorphic features such as short stature, a low hairline, or a webbed neck, the suspicion for Turner's syndrome should be high. While FSH and LH levels may be elevated, the definitive diagnosis would be made from a karyotype.

Ref: Klein DA, Poth MA: Amenorrhea: An approach to diagnosis and management. Am Fam Physician 2013;87(11):781-788.

Item 31

ANSWER: A

There is no indication for cardiac testing in a low-risk asymptomatic person, and testing may lead to harm resulting from false positives. The U.S. Preventive Services Task Force does not recommend resting or stress EKG testing for asymptomatic low-risk patients (D recommendation). Asymptomatic patients should be risk stratified to assess the risk of chronic heart disease, and this patient should have a lipid profile for risk stratification. Low-risk patients do not benefit from nontraditional risk assessments, including high-sensitivity C-reactive protein or coronary artery calcium assessment.

Ref: Final Recommendation Statement: Coronary Heart Disease: Screening Using Non-Traditional Risk Factors. US Preventive Services Task Force, 2009. 2) Final Recommendation Statement: Coronary Heart Disease: Screening with Electrocardiography. US Preventive Services Task Force, 2012. 3) Goff DC Jr, Lloyd-Jones DM, Bennett G, et al; American College of Cardiology/American Heart Association Task Force on Practice Guidelines: 2013 ACC/AHA guideline on the assessment of cardiovascular risk: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation 2014;129(25 Suppl 2):S49-S73.

Item 32

ANSWER: D

Respiratory syncytial virus (RSV) is a common cause of respiratory tract infections in children. The infections are usually self-limited and are rarely associated with bacterial co-infection, but in very young infants, prematurely born infants, or those with pre-existing heart/lung conditions, the infection can be severe. In North America, RSV season is November to April. Treatment is primarily supportive, including a trial of bronchodilators, with continued use only if there is an immediate response. Corticosteroids and antibiotics are not routinely indicated (SOR B). Routine laboratory and radiologic studies should not be used in making the diagnosis, as it is based on the history and physical examination (SOR C).

Ref: Dawson-Caswell M, Muncie HL Jr: Respiratory syncytial virus infection in children. Am Fam Physician 2011;83(2):141-146.

Item 33

ANSWER: A

This patient is most likely suffering from a drug-induced myopathy caused by simvastatin, which is associated with elevated creatine kinase. Polymyalgia rheumatica is usually associated with an elevated erythrocyte sedimentation rate. Guillain-Barré syndrome is associated with depressed deep tendon reflexes. This case has no clinical features or laboratory findings that suggest ketoacidosis.

Ref: Saguil A: Evaluation of the patient with muscle weakness. Am Fam Physician 2005;71(7):1327-1336. 2) Ahmad Z: Statin intolerance. Am J Cardiol 2014;113(10):1765-1771.

Item 34

ANSWER: A

Amoxicillin is the recommended first-line treatment for previously healthy infants and school-age children with mild to moderate community-acquired pneumonia (CAP) (strong recommendation; moderate-quality evidence). The most prominent bacterial pathogen in CAP in this age group is Streptococcus pneumoniae, and amoxicillin provides coverage against this organism. Azithromycin would be an appropriate choice in an older child because Mycoplasma pneumoniae would be more common. Moxifloxacin should not be used in children. Ceftriaxone and cefdinir can both be used to treat CAP, but they are broader spectrum antibiotics and would not be a first-line choice in this age group.

Ref: Bradley JS, Byington CL, Shah SS, et al; Pediatric Infectious Diseases Society and the Infectious Diseases Society Of America: The management of community-acquired pneumonia in infants and children older than 3 months of age: Clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. Clin Infect Dis 2011;53(7):e25-e76.

Item 35

ANSWER: A

When compared to a figure-of-eight dressing, a sling has been shown to have similar fracture healing rates in patients with a nondisplaced midshaft clavicular fracture. In addition, a figure-of-eight dressing is uncomfortable and difficult to adjust, and patients have reported increased satisfaction when treated with a sling. Long and short arm casts are not appropriate options to manage a patient with a clavicular fracture. Operative treatment is an option to treat displaced midshaft fractures (SOR B).

It should be noted that a Cochrane review of interventions for clavicle fracture pointed out that the studies of this problem were done in the 1980s and did not meet current standards. One of the conclusions of this review was that further research should be done.

Ref: Pecci M, Kreher JB: Clavicle fractures. Am Fam Physician 2008;77(1):65-70. 2) Lenza M, Belloti JC, Andriolo RB, Faloppa F: Conservative interventions for treating middle third clavicle fractures in adolescents and adults. Cochrane Database Syst Rev 2014;(5):CD007121.

Item 36

ANSWER: E

In children, obstructive sleep apnea (OSA) is most often due to enlarged tonsils and adenoids. OSA onset is usually between 2 and 8 years of age, coinciding with peak tonsil growth. Adenotonsillectomy is the primary treatment for most non-obese children with OSA (SOR B). SSRIs are sometimes effective in treating nightmares because these medications can suppress rapid eye movement sleep. Benzodiazepines are an option for treating sleep terrors. Methylphenidate is a stimulant used to treat attention-deficit/hyperactivity disorder and has no benefit for OSA. The use of a mouthguard at night is recommended for management of temporomandibular joint syndrome to reduce excessive teeth grinding during sleep. It is not a treatment for OSA.

Ref: American Academy of Sleep Medicine: International Classification of Sleep Disorders: Diagnostic and Coding Manual, ed 2nd. American Academy of Sleep Medicine, 2005. 2) Marcus CL, Brooks LJ, Draper KA, et al: Diagnosis and management of childhood obstructive sleep apnea syndrome. Pediatrics 2012;130(3):e714-e755. 3) Carter KA, Hathaway NE, Lettieri CF: Common sleep disorders in children. Am Fam Physician 2014;89(5):368-377.

Item 37

ANSWER: D

Chronic kidney disease (CKD) is now divided into five stages of progressively worsening function based on the glomerular filtration rate (GFR). Stage 1 is defined as a GFR >90 mL/min/1.73 m^2, while the fifth stage, kidney failure, is defined as a GFR <15 mL/min/1.73 m^2. Anemia is associated with not only stage 5 disease, where it is universal, but also with earlier stages. The National Kidney Foundation Guidelines define anemia as a hemoglobin level $\leq$13.5 g/dL in men or $\leq$12.0 g/dL in women.

Anemia due to CKD is diagnosed by excluding other etiologies. Anemia in CKD is due to decreased production of erythropoietin, but testing for levels is not needed, nor is a bone marrow biopsy. The indicated tests include a CBC, reticulocyte count, ferritin level, vitamin B_{12} level, folate level, and transferrin saturation (serum iron to total iron binding capacity ratio). Usually the CBC will demonstrate a normochromic, normocytic anemia, but can show microcytosis (mean corpuscular volume <80). A serum ferritin level <25 ng/mL is indicative of low iron stores. Some patients have a combination of iron deficiency and anemia of chronic disease due to the kidney disease.

Patients with depleted iron stores will benefit from replenishment, which serves to correct an isolated iron deficiency or improve the response to erythropoiesis-stimulating agents. Iron therapy is generally initiated orally with ferrous sulfate, 325 mg 3 times a day. The effectiveness of this therapy can be monitored by checking hemoglobin, transferrin saturation, and ferritin levels at 1 and 3 months after beginning treatment. If the goals have not been achieved by 3 months, intravenous iron therapy should be considered.

For patients who do not respond to iron replacement, erythropoiesis-stimulating agents such as epoetin alfa or darbepoetin alfa should be used. The goal should be to relieve symptoms such as fatigue and to achieve a hemoglobin level of 11–12 g/dL. Levels >13 g/dL increase the mortality rate, particularly from cardiovascular disease.

Ref: Bross MH, Soch K, Smith-Knuppel T: Anemia in older persons. Am Fam Physician 2010;82(5):480-487. 2) Rivera JA, O'Hare AM, Harper GM: Update on the management of chronic kidney disease. Am Fam Physician 2012;86(8):749-754. 3) Fiore DC, Fox CL: Urology and Nephrology Update. American Academy of Family Physicians, FP Essentials monograph series, no 416, 2014, pp 22-25.

Item 38

ANSWER: B

Heart failure due to diastolic dysfunction occurs in the older population. The criteria for diastolic heart failure include symptoms and signs consistent with heart failure (including dyspnea), a nondilated left ventricle with a preserved ejection fraction (≥50%), and evidence of structural heart disease such as diastolic dysfunction on echocardiography (SOR C).

Ref: Argulian E, Messerli FH: Misconceptions and facts about "diastolic" heart failure. Am J Med 2014;127(12):1144-1147.

Item 39

ANSWER: C

Slipped capital femoral epiphysis (SCFE) occurs most commonly during the adolescent growth spurt (11–13 years of age for girls, 13–15 years of age for boys). While the cause is unknown, associated factors include anatomic variables such as femoral retroversion or steeper inclination of the proximal femoral physis, in addition to being overweight. African-Americans are affected more commonly as well.

The patient may present with pain in the groin or anterior thigh, but also may present with pain referred to the knee. That is also the case for Legg-Calvé-Perthes disease, also known as avascular or aseptic necrosis of the femoral head. This condition most commonly occurs in boys 4–8 years of age. In addition to hip (or knee) pain, limping is a prominent feature.

Upper thigh numbness in an adolescent female is a classic symptom of meralgia paresthetica, which is attributed to impingement of the lateral femoral cutaneous nerve in the groin, often associated with obesity or wearing clothing that is too tight in the waist or groin. Developmental dysplasia of the hip is identified by a click during a provocative hip examination of the newborn, using both the Barlow and Ortolani maneuvers to detect subluxation or dislocation.

Ref: Sarwark JF (ed): Essentials of Musculoskeletal Care, ed 4. American Academy of Orthopaedic Surgeons, 2010, pp 1050-1053, 1122-1126, 1180-1183.

Item 40

ANSWER: A

Patients with symptomatic peripheral arterial disease should be started on a daily dose of either aspirin or clopidogrel to prevent cardiovascular events such as acute myocardial infarction or stroke (SOR B). Cilostazol is a phosphodiesterase inhibitor with both antiplatelet and arterial vasodilatory activity. It has been shown to improve claudication symptoms by 50% compared to placebo. Likewise, pentoxifylline is also used in the treatment of claudication symptoms but is less effective than cilostazol and is reserved as a second-line agent. Neither agent has been shown to decrease cardiovascular events in patients with symptomatic peripheral artery disease. Neither enoxaparin nor warfarin is indicated for symptomatic peripheral artery disease.

Ref: US Preventive Services Task Force: Screening for peripheral arterial disease: Recommendation statement. Am Fam Physician 2006;73(3):497-500. 2) Hauk L: ACCF/AHA update peripheral artery disease management guideline. Am Fam Physician 2012;85(10):1000-1001. 3) Hennion DR, Siano KA: Diagnosis and treatment of peripheral arterial disease. Am Fam Physician 2013;88(5):306-310.

Item 41

ANSWER: D

This patient has signs and symptoms of a hip labral tear. This causes dull or sharp groin pain, which in some patients radiates to the lateral hip, anterior thigh, or buttock. The pain usually has an insidious onset, but occasionally begins acutely after a traumatic event. Half of patients also have mechanical symptoms, such as catching or painful clicking with activity. The FADIR and FABER tests are effective for detecting intra-articular pathology (the sensitivity is 75%–96% for the FADIR test and 88% for the FABER test), although neither test has high specificity. Magnetic resonance arthrography is considered the diagnostic test of choice for labral tears, as it has a sensitivity of 90% and an accuracy of 91%. However, if a labral tear is not suspected, less invasive imaging modalities such as plain radiography and conventional MRI should be used first to assess for other causes of hip and groin pain.

This patient has no history of trauma or risk factors to suggest a fracture. A femoral hernia would typically present as pain that is worse with straining or lifting, associated with a palpable bulge in the upper thigh. Trochanteric bursitis typically causes lateral hip pain with point tenderness over the greater trochanter of the femur.

Ref: Wilson JJ, Furukawa M: Evaluation of the patient with hip pain. Am Fam Physician 2014;89(1):27-34.

Item 42

ANSWER: D

Shared decision-making should include a discussion of risks and benefits that are meaningful to the individual patient. It is an important component of patient-centered care, but published studies often report intermediate endpoints. Patient-oriented outcomes typically include data on mortality (especially all-cause mortality because changes in disease-specific mortality may be offset by changes in other causes of mortality), morbidity, symptoms, and quality of life. Intermediate endpoints typically involve disease-oriented data, including histologic, physiologic, or clinical measurements such as blood pressure, carotid intimal thickness, hemoglobin A_{1c}, and risk scores such as the Framingham score.

Ref: Sanders AR, van Weeghel I, Vogelaar M, et al: Effects of improved patient participation in primary care on health-related outcomes: A systematic review. Fam Pract 2013;30(4):365-378.

Item 43

ANSWER: B

Fever and febrile seizures may occur after administration of several vaccines. Postimmunization seizures, especially febrile seizures, occur at a higher rate in children who have a past history of seizures or a first-degree relative with a history of seizures. The benefits of the vaccines outweigh the risks, so they are not contraindicated in this situation, although the parents need to be cautioned about the increased risk of seizure.

Of the vaccines listed, the only one likely to put the child at risk for a seizure up to 2 weeks after administration is the MMR vaccine. Specifically, it is the measles component of the vaccine that is the potential culprit. A temperature of 39.4°C (103°F) or higher develops in approximately 5%–15% of susceptible vaccine recipients, usually 6–12 days after receipt of MMR vaccine. The fever generally lasts 1–2 days but may last up to 5 days.

Ref: Possible side-effects from vaccines. Centers for Disease Control and Prevention website, 2013.

Item 44

ANSWER: D

This patient has injured his ulnar collateral ligament (UCL). The UCL is the primary restraint to valgus stress on the elbow during overhead throwing. These injuries often occur in athletes participating in sports that require overhead throwing, such as baseball, javelin, and volleyball. Patients often report a pop followed by immediate pain and bruising around the medial elbow. The moving valgus stress test has 100% sensitivity and 75% specificity for diagnosing UCL injuries.

Medial epicondylitis usually presents with an insidious onset of pain related to a recent increase in occupational or recreational activities. Patients also often report weakened grip strength. The point of maximal tenderness is 5–10 mm distal to and anterior to the medial epicondyle. It is most often a tendinopathy of the flexor carpi radialis and the pronator teres.

Biceps tendinopathy usually presents with a history of vague anterior elbow pain and a history of repeated elbow flexion with forearm supination and pronation, such as dumbbell curls. Resisted supination produces pain deep in the antecubital fossa.

Cubital tunnel syndrome is a neuropathy of the ulnar nerve caused by compression or traction as it passes through the cubital tunnel of the medial elbow. The onset of pain is more insidious than UCL injury, occurring with repetitive activity, and is usually accompanied by numbness and tingling in the ulnar border of the forearm and hand. If it has existed for some time, the intrinsic hand muscle may become weak.

Tendinopathy of the triceps insertion is more common in weight lifters or athletes who repetitively extend their elbows against resistance. Pain occurs at the posterior elbow with resisted extension, and tenderness is located over the triceps insertion.

Ref: Kane SF, Lynch JH, Taylor JC: Evaluation of elbow pain in adults. Am Fam Physician 2014;89(8):649-657.

Item 45

ANSWER: B

The live attenuated intranasal influenza vaccine is recommended for healthy nonpregnant persons 2–49 years of age. It is more effective than the inactivated vaccine in children 2–6 years of age; for patients 6–49 years of age either the live attenuated intranasal or the inactivated vaccine is recommended. The live intranasal vaccine is contraindicated in pregnancy and in patients with asthma or COPD. Patients older than 49 years should receive the inactivated vaccine.

Ref: Influenza vaccine for 2014–2015. Med Lett Drugs Ther 2014;56(1453):97-99.

Item 46

ANSWER: E

All of the pathogens listed can cause pneumonia in any patient. However, in patients with chronic lung disease who are taking corticosteroids, Pseudomonas is more common than in those with otherwise healthy lungs. The antibiotics chosen empirically should cover this pathogen.

Ref: Musher DM, Thorner AR: Community-acquired pneumonia. N Engl J Med 2014;371(17):1619-1628.

Item 47

ANSWER: D

This patient scores in the moderate range for withdrawal severity and is a candidate for pharmacotherapy, based on the Clinical Institute Withdrawal Assessment for Alcohol Scale, Revised, and the Short Alcohol Withdrawal Scale. He also has no known contraindications to outpatient treatment, such as abnormal laboratory results, absence of a support network, acute illness, high risk for delirium tremens, history of alcohol withdrawal seizure, recent long-term intake of large amounts of alcohol, poorly controlled chronic medical conditions, a serious psychiatric condition, severe withdrawal symptoms, or a positive urine drug screen.

Benzodiazepines are the preferred medication for treating alcohol withdrawal (SOR A) and preventing alcohol withdrawal seizures. There is no evidence that indicates that any particular medication is superior, but long-acting benzodiazepines are preferred. Neither fixed nor symptom-triggered dosing of benzodiazepines has been shown to be superior to the other. Although anticonvulsants have less abuse potential than benzodiazepines, they do not prevent seizures or delirium tremens. Clonidine and β-blockers can help reduce adrenergic symptoms but do not prevent alcohol withdrawal seizures. Thiamine or magnesium may be appropriate to address nutritional deficiencies resulting from alcoholism but would not reduce withdrawal symptoms.

Ref: Muncie HL Jr, Yasinian Y, Oge' L: Outpatient management of alcohol withdrawal syndrome. Am Fam Physician 2013;88(9):589-595.

Item 48

ANSWER: D

Whole cow's milk does not supply infants with enough vitamin E, iron, and essential fatty acids, and overburdens them with too much protein, sodium, and potassium. Skim and low-fat milk lead to the same problems as whole milk, and also fail to provide adequate calories for growth. For these reasons cow's milk is not recommended for children under 12 months of age. Human breast milk or iron-fortified formula, with introduction of certain solid foods and juices after 4–6 months of age if desired, is appropriate for the first year of life.

Ref: Allen RE, Myers AL: Nutrition in toddlers. Am Fam Physician 2006;74(9):1527-1532. 2) Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, p 164.

Item 49

ANSWER: A

It is usually simple to reduce a lateral patellar dislocation, and these injuries rarely require acute surgical management. The proper technique is to have the patient sit or lie with the leg in a flexed position and then apply gentle medial pressure to the patella until the most lateral edge is over the femoral condyle. The leg should then be gently extended and the knee brought into full extension. This should cause the patella to slip back into place, and the knee should then be immobilized.

Ref: Thomsen TW, Setnik GS: Dislocation reduction of the patella (Orthopedics). Procedures Consult 2012. 2) Subluxation/dislocation of the patella. Wheeless' Textbook of Orthopaedics. Duke Orthopaedics, 2015. www.wheelessonline.com/ortho/subluxation_dislocation_of_the_patella

Item 50

ANSWER: D

The U.S. Selected Practice Recommendations for Contraceptive Use, 2013, focuses on optimizing the use of contraceptive methods. Perceived obstacles to obtaining guidance and prescription contraceptives are identified, and are addressed by recommendations that facilitate the ease of obtaining both. In the absence of coexisting medical conditions that may require additional evaluation or limit contraceptive options, the only medical evaluation identified as essential before prescription of combined hormonal contraception is measurement of blood pressure, as severe hypertension is a contraindication to oral contraception. Ascertaining the likelihood of pregnancy based on the sexual history and/or phase of the menstrual cycle is also necessary before determining a start date. Each of the listed examination options is ideal, but none has been found to contribute substantially to the safe and effective use of combined hormonal contraceptives. A baseline weight is useful in determining excessive weight gain on reevaluation following the initiation of oral contraception, but it is not a prerequisite.

Ref: Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC): U.S. Selected Practice Recommendations for Contraceptive Use, 2013: Adapted from the World Health Organization Selected Practice Recommendations for Contraceptive Use, 2nd edition. MMWR Recomm Rep 2013;62(RR-05):1-60.

Item 51

ANSWER: B

Opioid-induced hyperalgesia is characterized by a paradoxical increase in sensitivity to pain despite an increase in the opioid dosage. It is seen in patients who are receiving high doses of parenteral opioids such as morphine. Patients report the development of diffuse pain away from the site of the original pain. Allodynia, a perception of pain in the absence of a painful stimulus, is also typical in opioid-induced hyperalgesia. Strategies to manage this condition include reducing the current opioid dosage, and occasionally eliminating the current opioid and starting another opioid. The addition of non-opioid pain medications should also be considered. The addition of an anxiolytic is not likely to improve this patient's pain (SOR C).

Ref: Groninger H, Vijayan J: Pharmacologic management of pain at the end of life. Am Fam Physician 2014;90(1):26-32.

Item 52

ANSWER: D

Corticosteroids, either orally or parenterally, are the first-line treatment for acute exacerbations of multiple sclerosis (MS) (SOR A). A Cochrane review found no significant differences in outcomes based on the route of administration. Disease-modifying agents such as interferon beta, glatiramer, and immunosuppressants such as fingolimod may decrease the frequency of exacerbations and slow the progression of MS but are not the agents of first choice for treatment of acute flareups. Pramipexole does not have a primary role in the treatment of MS, although it might be used to treat certain specific symptoms as an adjunct therapy.

Ref: Saguil A, Kane S, Farnell E: Multiple sclerosis: A primary care perspective. Am Fam Physician 2014;90(9):644-652.

Item 53

ANSWER: E

Serotonin syndrome is a result of increased serotonergic activity in the central nervous system and may be life-threatening. It is usually a combination of autonomic hyperactivity, neuromuscular abnormality, and mental status changes. The most common group of medications that may cause this is the SSRIs. Serotonin syndrome most commonly occurs in the first 24 hours of treatment. Patients often present with agitation and confusion, tachycardia, and elevated blood pressure, as well as a dry mouth. While there are usually no focal neurologic findings, hyperreflexia and even spontaneous clonus may be seen. The finding of slow, horizontal movement of the eyes is also helpful in making the diagnosis.

The initial management is to discontinue the offending agent, begin supportive care, and attempt to calm the patient verbally. Many times medication is needed, and the drug of choice is an intravenous benzodiazepine such as lorazepam or diazepam. If treatment for tachycardia or hypertension is needed, propranolol should not be used due to its longer activity. Haloperidol should be avoided, as it may actually increase anticholinergic activity. Flumazenil is rarely used, although it has been used for tricyclic antidepressant overdosage, and it carries a significant risk of inducing seizures. If the patient does not respond to calming with benzodiazepines, the antidote would be cyproheptadine.

Ref: Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine: A Comprehensive Study Guide, ed 7. McGraw-Hill, 2011, pp 1202-1203. 2) Bienvenu OJ, Neufeld KJ, Needham DM: Treatment of four psychiatric emergencies in the intensive care unit. Crit Care Med 2012;40(9):2662-2670.

Item 54

ANSWER: E

Diagnostic criteria for sepsis include leukocytosis. Diagnostic criteria for severe sepsis (sepsis plus organ dysfunction) include an increase in the serum creatinine level >0.5 mg/dL, thrombocytopenia, and hyperbilirubinemia. A diagnosis of septic shock requires either hyperlactatemia or hypotension refractory to intravenous fluids.

Ref: Angus DC, van der Poll T: Severe sepsis and septic shock. N Engl J Med 2013;369(9):840-851.

Item 55

ANSWER: C

Positive predictive value refers to the percentage of patients with a positive test for a disease who actually have the disease. The negative predictive value of a test is the proportion of patients with negative test results who do not have the disorder.

The percentage of patients with a disorder who have a positive test for that disorder is a test's sensitivity. The percentage of patients without a disorder who have a negative test for that disorder is a test's specificity.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, pp 37-41.

Item 56

ANSWER: C

Gilbert's syndrome is a hereditary condition associated with unconjugated hyperbilirubinemia (usually with a bilirubin level < 5.0 mg/dL). The bilirubin level increases with infection, exertion, and fasting. Patients are asymptomatic and have otherwise normal liver function studies. The differential diagnosis includes hemolytic anemias, which cause a decrease in serum haptoglobin, an increase in lactate dehydrogenase, and/or CBC abnormalities, particularly on the peripheral smear.

Ref: VanWagner LB, Green RM: Evaluating elevated bilirubin levels in asymptomatic adults. JAMA 2015;313(5):516-517.

Item 57

ANSWER: A

The U.S. Preventive Services Task Force recommends against screening for cervical cancer for women younger than 21, for women over the age of 65 who have had adequate screening in the recent past and are not at high risk, and for women who have had a hysterectomy with removal of the cervix and no history of CIN 2 or 3 or cervical cancer (USPSTF D recommendation). Women between the ages of 21 and 65 can be screened every 3 years with cytology alone, or the interval can be increased to 5 years after age 30 by using a combination of cytology and HPV testing (USPSTF A recommendation). The history of HPV vaccination is not a factor in screening decisions. Other organizations such as the American Cancer Society and the American College of Obstetricians and Gynecologists have similar guidelines.

Ref: Fontaine PL, Saslow D, King VJ: ACS/ASCCP/ASCP guidelines for the early detection of cervical cancer. Am Fam Physician 2012;86(6):501, 506-507. 2) Final Recommendation Statement. Cervical Cancer: Screening. US Preventive Services Task Force, 2014.

Item 58

ANSWER: E

Lidocaine buffered with sodium bicarbonate decreases the pain associated with the injection. This effect is enhanced when the solution is warmed to room temperature (SOR B). Rapidly inserting the needle through the skin, injecting the solution slowly and steadily while withdrawing the needle, and injecting into the subcutaneous tissue also minimize the pain of injection.

Ref: Latham JL, Martin SN: Infiltrative anesthesia in office practice. Am Fam Physician 2014;89(12):956-962.

Item 59

ANSWER: B

Asplenic patients who develop a fever should be given antibiotics immediately. Due to the increased risk of pneumococcal sepsis in asplenic patients, vaccinations against these particular bacteria are specifically recommended. Since pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23) can interact with each other they should be given at least 8 weeks apart. Prophylactic penicillin given orally twice a day is particularly important in children under 5 years of age who are asplenic, and may be considered for 1–2 years post splenectomy in older patients. Lifelong daily antibiotics may be considered following post-splenectomy sepsis. The risk for Haemophilus influenzae type b infection is not increased in asplenic patients, so additional vaccine is not needed for those who have already been vaccinated. Live attenuated influenza vaccine may be used in asplenic patients, unless they have sickle cell disease.

Ref: Rubin LG, Schaffner W: Care of the asplenic patient. N Engl J Med 2014;371(4):349-356.

Item 60

ANSWER: B

This patient has de Quervain's tenosynovitis. Finkelstein's test has good sensitivity and specificity (SOR C) in patients with a negative grind test. A positive grind test would be more consistent with scaphoid fracture. A hand radiograph with secondary thumb spica splinting would be appropriate for a suspected scaphoid fracture, but the insidious onset as opposed to overt trauma makes this diagnosis unlikely in this case. A short arm cast is not indicated in de Quervain's tenosynovitis but may be appropriate for forearm/wrist fractures.

Ref: Tallia AF, Cardone DA: Diagnosis and therapeutic injection of the wrist and hand region. Am Fam Physician 2003;67(4):745-750. 2) Shehab R, Mirabelli MH: Evaluation and diagnosis of wrist pain: A case-based approach. Am Fam Physician 2013;87(8):568-573.

Item 61

ANSWER: E

Methicillin-resistant Staphylococcus aureus (MRSA) is the predominant cause of suppurative skin and soft-tissue infection. While community-acquired strains have been susceptible to many antibiotics, clindamycin is associated with Clostridium difficile enterocolitis, trimethoprim/sulfamethoxazole is usually used orally only for outpatient treatment, and doxycycline and minocycline are often effective clinically but seldom used for serious infections. Resistance to quinolones is increasing and may emerge during treatment. Vancomycin given parenterally is generally still the drug of choice for hospitalized patients.

Ref: Drugs for MRSA skin and soft-tissue infections. Med Lett Drugs Ther 2014;56(1442):39-40.

Item 62

ANSWER: D

Patients with chronic illness, diabetes mellitus, cerebrospinal fluid leaks, chronic bronchopulmonary dysplasia, cyanotic congenital heart disease, or cochlear implants should receive one dose of pneumococcal polysaccharide vaccine after 2 years of age, and at least 2 months after the last dose of pneumococcal conjugate vaccine. Revaccination with polysaccharide vaccine is not recommended for these patients. Individuals with sickle cell disease, those with anatomic or functional asplenia, immunocompromised persons with renal failure or leukemia, and HIV-infected persons should receive polysaccharide vaccine on this same schedule and should also be revaccinated at least 3 years after the first dose.

Ref: Nuorti JP, Whitney CG; Centers for Disease Control and Prevention (CDC): Prevention of pneumococcal disease among infants and children—Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine—Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2010;59(RR-11):1-18. 2) Centers for Disease Control and Prevention (CDC): Use of 13-valent pneumococcal conjugate vaccine and 23-valent pneumococcal polysaccharide vaccine among children aged 6–18 years with immunocompromising conditions: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2013;62(25):521-524.

Item 63

ANSWER: E

Spironolactone, an aldosterone antagonist, can bind to androgen and progesterone receptors, in addition to the mineralocorticoid receptors, resulting in breast tenderness and gynecomastia. Eplerenone, another aldosterone antagonist, has greater specificity for the mineralocorticoid receptors and is therefore less likely to cause breast tenderness and gynecomastia than spironolactone. While there have been case reports of gynecomastia with ACE inhibitors and digoxin, it is noted to be rare. The side effect profile of hydralazine does not include gynecomastia.

Ref: Bowman JD, Kim H, Bustamante JJ: Drug-induced gynecomastia. Pharmacotherapy 2012;32(12):1123-1140. 2) Morcos RN, Kizy T: Gynecomastia: When is treatment indicated? J Fam Pract 2012;61(12):719-725.

Item 64

ANSWER: E

Although infertility issues may be very complex, the primary care physician can initiate an appropriate workup. For women who are having regular menstrual cycles, ovulation is very likely. Ovulation can be confirmed by a progesterone level ≥5 ng/mL on day 21 of the cycle. If this is the case, tubal patency should be confirmed with hysterosalpingography or laparoscopy. Obstruction or adhesions would require surgical correction, but if there are none, referral for assisted reproductive technology would be appropriate.

Should the progesterone level be < 5 ng/mL, anovulation should be investigated with TSH, estradiol, FSH, and prolactin levels. Treatment can be initiated if findings reveal the cause of the problem, but if they are unremarkable it is reasonable to try clomiphene to induce ovulation. If this is unsuccessful, referral would be the next step.

Ref: Lindsay TJ, Vitrikas KR: Evaluation and treatment of infertility. Am Fam Physician 2015;91(5):308-314.

Item 65

ANSWER: D

U.S. Preventive Services Task Force (USPSTF) guidelines recommend that asymptomatic adults with sustained blood pressure > 135/80 mm Hg be screened for type 2 diabetes mellitus using fasting plasma glucose, a 2-hour glucose tolerance test, or hemoglobin A_{1c} measurements (USPSTF B recommendation). Screening for colon cancer with either annual high-sensitivity fecal occult blood testing, sigmoidoscopy every 5 years, or colonoscopy every 10 years is also recommended for adults between the ages of 50 and 75 years (USPSTF A recommendation). Men who have ever smoked (defined as 100 or more cigarettes) should be screened once for abdominal aortic aneurysm (USPSTF B recommendation) between the ages of 65 and 75. Similar screening is recommended in men who have never smoked, but this is a USPSTF grade C recommendation. No recommendation has been made with regard to screening for peripheral vascular disease, and the recommendation on screening for hemochromatosis is listed as inactive on the USPSTF website.

Ref: Final Recommendation Statement: Diabetes Mellitus (Type 2) in Adults: Screening. US Preventive Services Task Force, 2008. 2) Final Recommendation Statement: Colorectal Cancer: Screening. US Preventive Services Task Force, 2008. 3) Final Recommendation Statement: Peripheral Arterial Disease (PAD) and CVD in Adults: Risk Assessment with Ankle/Brachial Index. US Preventive Services Task Force, 2013. 4) Final Recommendation Statement: Abdominal Aortic Aneurysm: Screening. US Preventive Services Task Force, 2013.

Item 66

ANSWER: B

As is true for the general population in the United States, coronary artery disease is the leading cause of death in patients with rheumatoid arthritis (RA). RA patients have accelerated atherosclerosis related to a chronic inflammatory state. It is thus particularly important to address modifiable risk factors for coronary disease in these patients, including tobacco use, hypertension, and dyslipidemia. Patients with RA also have an increased risk of lymphoma, lung cancer, and thromboembolic disease, but these are not as common as coronary disease. Infections are a concern for patients on disease-modifying agents but are not the leading cause of death.

Ref: Wasserman AM: Diagnosis and management of rheumatoid arthritis. Am Fam Physician 2011;84(11):1245-1252. 2) Bacani AK, Gabriel SE, Crowson CS, et al: Noncardiac vascular disease in rheumatoid arthritis: Increase in venous thromboembolic events? Arthritis Rheum 2012;64(1):53–61.

Item 67

ANSWER: D

An FVC that falls below the lower limit of normal (LLN), defined as the fifth percentile of spirometry data obtained from the Third National Health and Nutrition Examination Survey, is consistent with a restrictive pattern of pulmonary function. An FEV_1/FVC less than the LLN is consistent with an obstructive defect. A mixed pattern exists when both values are below the LLN, as in this case. The patient should now be referred for full pulmonary function testing, including diffusing capacity of the lungs for carbon monoxide (DLCO).

DLCO is a quantitative measure of gas transfer in the lungs. Diseases that decrease blood flow to the lungs or that damage alveoli will lead to less efficient gas exchange and result in a lower DLCO value. Bronchoprovocation (a methacholine challenge, a mannitol inhalation challenge, or exercise testing) should be performed if pulmonary function test results are normal but exercise- or allergen-induced asthma is suspected.

Ref: Johnson JD, Theurer WM: A stepwise approach to the interpretation of pulmonary function tests. Am Fam Physician 2014;89(5):359-366.

Item 68

ANSWER: A

There is little evidence that femoral anteversion causes long-term functional problems. Studies have shown that shoe wedges, torque heels, and twister cable splints are not effective. Surgery should be reserved for children 8–10 years of age who still have cosmetically unacceptable, dysfunctional gaits. Major complications of surgery occur in approximately 15% of cases, and can include residual in-toeing, out-toeing, avascular necrosis of the femoral head, osteomyelitis, fracture, valgus deformity, and loss of position. Thus, observation alone is appropriate for a 5-year-old with uncomplicated anteversion.

Ref: Mooney JF 3rd: Lower extremity rotational and angular issues in children. Pediatr Clin North Am 2014;61(6):1175-1183. 2) Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, pp 2344-2346. 3) Talley W, Goodemote P, Henry SL: Managing intoeing in children. Am Fam Physician 2011;84(8):937-944.

Item 69

ANSWER: E

In obsessive-compulsive disorder (OCD), intrusive thoughts cause anxiety, which patients suppress with recurring behaviors. Various types of psychotherapy have been tried, but repeated exposure to fearful stimuli has been the best. Repeated and prolonged exposure to stimuli that elicit fear, combined with strict avoidance of any compulsive behaviors, seems to be the most effective method for controlling the obsessive-compulsive behaviors. Tricyclic antidepressants and SSRIs are also effective for treating OCD.

Freudian analysis is ineffective for relieving the anxiety associated with OCD. Benzodiazepines can help with anxiety but do little for long-term control, while amphetamines aggravate anxiety and are not helpful. Atypical antipsychotics may help with other mental disorders associated with obsessive-compulsive behavior but do not treat the disorder itself.

Ref: Grant JE: Obsessive-compulsive disorder. N Engl J Med 2014;371(7):646-653.

Item 70

ANSWER: B

Antiviral drugs are useful for treatment of acute herpes zoster but not for treatment of postherpetic neuralgia. Herpes zoster vaccine can prevent postherpetic neuralgia by reducing the incidence of herpes zoster but it has no role in the treatment of neuralgia. Neither acupuncture nor epidural corticosteroid injections are helpful in treating postherpetic neuralgia. Topical agents such as lidocaine patches and capsaicin cream or patches have been shown to reduce symptoms of postherpetic neuralgia, as have the oral agents gabapentin, pregabalin, and amitriptyline.

Ref: Johnson RW, Rice AS: Postherpetic neuralgia. N Engl J Med 2014;371(16):1526-1533.

Item 71

ANSWER: E

Early diagnosis of a nontraumatic subarachnoid hemorrhage is paramount for achieving a good outcome when a patient presents with a headache that is unusually severe and feels different than other headaches. Risk factors include smoking, hypertension, heavy alcohol use, and a family history of aneurysm or hemorrhagic stroke. The initial evaluation should consist of noncontrast CT of the head (SOR C). If it is negative or equivocal the next step would be to perform a lumbar puncture to determine whether or not the cerebrospinal fluid is xanthochromic. The absence of xanthochromia rules out subarachnoid hemorrhage (SOR C).

Ref: Cohen-Gadol AA, Bohnstedt BN: Recognition and evaluation of nontraumatic subarachnoid hemorrhage and ruptured cerebral aneurysm. Am Fam Physician 2013;88(7):451-456. 2) Perry JJ, Stiell IG, Sivilotti ML, et al: Clinical decision rules to rule out subarachnoid hemorrhage for acute headache. JAMA 2013;310(12):1248-1255.

Item 72

ANSWER: B

The Advisory Committee on Immunization Practices advises that the 13-valent pneumococcal vaccine be given in addition to the 23-valent vaccine, preferably before the 23-valent vaccine. Only one dose of influenza vaccine is recommended per season. A single dose of 23-valent pneumococcal vaccine is all that is required.

Ref: In brief: PCV13 for adults 65 years and older. Med Lett Drugs Ther 2014;56:102.

Item 73

ANSWER: D

Proton pump inhibitors (PPIs), including omeprazole, are generally safe and effective for peptic ulcer disease, gastroesophageal reflux disease, and stress ulcer prevention in critically ill patients. As use has increased, however, risks of long-term use of PPIs have emerged. Currently known risks include increased fractures of the hip, wrist, and spine (SOR B), community-acquired pneumonia (SOR B), Clostridium difficile and other enteric infections (SOR C), hypomagnesemia (SOR B), and cardiac events when coadministered with clopidogrel (SOR B). PPIs may also affect the absorption of vitamins and minerals, including iron, vitamin B_{12}, and folate (SOR C). There is no known association of PPIs with nephrolithiasis or urinary tract infections.

Ref: Gill JM, Player MS, Metz DC: Balancing the risks and benefits of proton pump inhibitors. Ann Fam Med 2011;9(3):200–202. 2) Ament PW, Dicola DB, James ME: Reducing adverse effects of proton pump inhibitors. Am Fam Physician 2012;86(1):66-70.

Item 74

ANSWER: D

This patient has symptoms typical of a mild concussion without loss of consciousness. In such cases standard neuroimaging can be expected to be normal. The evaluation should include a standard concussion assessment tool, and if concussion is suspected the athlete should be removed from play. Complete physical and cognitive rest are required for the first 1–2 days, but return to normal activity must be individualized depending on the course of symptoms and response to gradually increasing activity. Athletes should be completely free of symptoms before returning to sports activities.

Ref: Scorza KA, Raleigh MF, O'Connor FG: Current concepts in concussion: Evaluation and management. Am Fam Physician 2012;85(2):123-132. 2) Valentine V, Logan K: Cognitive rest in concussion management. Am Fam Physician 2012;85(2):100-101. 3) Armstrong C: Evaluation and management of concussion in athletes: Recommendations from the AAN. Am Fam Physician 2014;89(7):585-587.

Item 75

ANSWER: A

ACE inhibitors or angiotensin receptor blockers should be used in all patients with a history of myocardial infarction and reduced ejection fraction. Aldosterone receptor antagonists are indicated in patients who have a left ventricular ejection fraction $\leq 35\%$. Nondihydropyridine calcium channel blockers with negative inotropic effects (verapamil and diltiazem) may be harmful in patients with low left ventricular ejection fractions. Statin therapy is recommended in all patients with a history of myocardial infarction. Evidence-based β-blockers (carvedilol or metoprolol succinate) should be used in all patients with a history of myocardial infarction.

Ref: Yancy CW, Jessup M, Bozkurt B, et al: 2013 ACCF/AHA guideline for the management of heart failure: Executive summary: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation 2013;128(16):1810-1852.

Item 76

ANSWER: B

Oral osmotics such as polyethylene glycol–based solutions are recommended as an appropriate initial approach to constipation in children because they are effective, easy to administer, noninvasive, and well tolerated (SOR C). Rectal therapies are similar in terms of effectiveness but are more invasive and less commonly used as first-line treatment (SOR A). Oral stimulants and bisacodyl rectal suppositories are not recommended for children under 2 years of age. Enemas are sometimes used as second-line therapy, but the addition of enemas to oral laxative regimens does not improve outcomes in children with severe constipation (SOR B). Manual disimpaction is a more invasive option and is not recommended as first-line treatment in young children.

Ref: Candy D, Belsey J: Macrogol (polyethylene glycol) laxatives in children with functional constipation and faecal impaction: A systematic review. Arch Dis Child 2009;94(2):156-160. 2) Bekkali NL, van den Berg MM, Dijkgraaf MG, et al: Rectal fecal impaction treatment in childhood constipation: Enemas versus high doses oral PEG. Pediatrics 2009;124(6):e1108-e1115. 3) Nurko S, Zimmerman LA: Evaluation and treatment of constipation in children and adolescents. Am Fam Physician 2014;90(2):82-90.

Item 77

ANSWER: A

Head lice are a common and easily treated inconvenience in school-aged children that, unlike body lice, are not associated with significant illnesses. Transmission generally requires head-to-head contact, as lice cannot survive when separated from their host for more than 24 hours and do not fly or hop. Visible nits are generally present at the time of diagnosis, confirming that the infestation has been present for some time, so immediate isolation from other children would not be expected to change the natural course of events. The American Academy of Pediatrics (AAP) recommends that children found to be infested with lice remain in class but be discouraged from close contact with others until treated appropriately with a pediculicide. The AAP position also recommends abandonment of "no nits" school policies, which prohibit attendance until no visible nits are identified. Nits can be found long after their deposition at the scalp level and generally have already hatched by the time they are easily noted at some distance from the scalp.

Ref: Frankowski BL, Bocchini JA Jr; Council on School Health and Committee on Infectious Diseases: Head lice. Pediatrics 2010;126(2):392-403. 2) Albrecht S: The prevention and treatment of head lice in children. US Pharm 2012;37(3):32-36.

Item 78

ANSWER: B

The first step in the evaluation of nonmassive hemoptysis is to obtain a chest radiograph. If this is normal and there is a high risk of malignancy (patient age 40 years or older with at least a 30-pack year smoking history), chest CT should be ordered. Bronchoscopy should also be considered in the workup of high-risk patients. If a chest radiograph shows an infiltrate, treatment with antibiotics is warranted. If the chest radiograph is normal the patient is at low risk for malignancy, and if the history does not suggest lower respiratory infection and hemoptysis does not recur, observation can be considered.

Ref: Earwood JS, Thompson TD: Hemoptysis: Evaluation and management. Am Fam Physician 2015;91(4):243-249.

Item 79

ANSWER: B

Symptoms of acute urticaria are best managed first with an H_1-antihistamine. Second-generation H_1-blockers are usually preferred because they have a longer duration of action and are less likely to cause drowsiness than first-generation H_1-blockers. Patients with associated laryngeal swelling and respiratory symptoms require urgent treatment with injectable epinephrine before anything else is given. Topical corticosteroids would not be helpful. H_2-blockers are modestly beneficial as an adjunct to H_1-blockers. Leukotriene-receptor antagonists may also be added if H_1-blockers are not sufficient.

Ref: Schaefer P: Urticaria: Evaluation and treatment. Am Fam Physician 2011;83(9):1078-1084.

Item 80

ANSWER: C

Many patients with uveitis have an associated systemic disease. Some medications may cause secondary uveitis, and conditions such as ocular lymphoma and bloodborne infection may masquerade as primary uveitis. In North America, the most common conditions associated with uveitis are the seronegative spondyloarthropathies, sarcoidosis, syphilis, rheumatoid arthritis, and reactive arthritis. All of the conditions listed may be associated with uveitis, but given the chest radiograph findings and clinical scenario in this case, sarcoidosis is most likely.

Ref: Harman LE, Margo CE, Roetzheim RG: Uveitis: The collaborative diagnostic evaluation. Am Fam Physician 2014;90(10):711-716.

Item 81

ANSWER: D

Vitamin D supplementation helps prevent falls in community-dwelling adults age 65 and older, although the mechanism is not clearly understood. Supplementation is recommended by the U.S. Preventive Services Task Force (SOR B).

Ref: US Preventive Services Task Force: Prevention of Falls in Community-Dwelling Older Adults: US Preventive Services Task Force Recommendation Statement. AHRQ pub no 11-05150-EF-2, 2012.

Item 82

ANSWER: D

Esophageal adenocarcinoma has become the predominant type of esophageal cancer in North America and Europe, and gastroesophageal reflux and obesity are the main risk factors. Helicobacter pylori infection, aspirin therapy, NSAID use, and Crohn's disease are not significant risk factors.

Ref: Rustgi AK, El-Serag HB: Esophageal carcinoma. N Engl J Med 2014;371(26):2499-2509.

Item 83

ANSWER: E

When symptoms begin to appear in a patient with aortic stenosis the prognosis worsens. It is therefore important to be aware of systolic murmurs in older patients presenting with exertional dyspnea, chest pain, or dizziness. This can be the first presentation of a downward spiral and the need for rapid valve replacement. Weight loss, frequent urination, jaundice, and worsening headache are not as closely associated with a generally worse outlook for patients with aortic stenosis.

Ref: Otto CM, Prendergast B: Aortic-valve stenosis—from patients at risk to severe valve obstruction. N Engl J Med 2014;371(8):744-756.

Item 84

ANSWER: B

Acute pyelonephritis is a common bacterial infection of the renal pelvis and kidney most often seen in young adult women. It is most commonly caused by Escherichia coli. Outpatient treatment with oral antibiotics is safe in most adults with mild or moderate pyelonephritis (SOR B). An oral fluoroquinolone such as ciprofloxacin is usually the first-line therapy in mild and moderate cases in areas where the rate of fluoroquinolone resistance in E. coli is $<10\%$ (SOR A). If the community fluoroquinolone resistance rate exceeds 10%, a one-time dose of a parenteral antimicrobial such as ceftriaxone or a consolidated dose of an aminoglycoside should be given, followed by an oral fluoroquinolone regimen (SOR B).

Alternative oral agents include trimethoprim/sulfamethoxazole and β-lactam antibiotics; however, these are not first-line empiric agents, due to high levels of resistance (SOR A), and should not be used for treatment until the uropathogen is confirmed to be susceptible. Amoxicillin and nitrofurantoin are sometimes used to treat uncomplicated cystitis but these agents are less effective than other available agents for treatment of pyelonephritis (SOR B). Erythromycin and metronidazole are not appropriate for treating pyelonephritis.

Ref: Colgan R, Williams M, Johnson JR: Diagnosis and treatment of acute pyelonephritis in women. Am Fam Physician 2011;84(5):519-526. 2) Gupta K, Hooton TM, Naber KG, et al: International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: A 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis 2011;52(5):e103-e120.

Item 85

ANSWER: B

Asymptomatic patients in excellent health often present with this characteristic chest radiograph pattern, which is usually due to histoplasmosis infection, especially if the patient has been in the midwestern United States. Exposure to bird or bat excrement is a common cause, and treatment is usually not needed. This pattern is not characteristic of the other infections listed, although miliary tuberculosis is a remote possibility despite the negative PPD skin test.

Ref: Mandell GL, Bennett JE, Dolin R (eds): Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, ed 7. Churchill Livingstone, 2010, pp 3305-3318.

Item 86

ANSWER: B

Immune (idiopathic) thrombocytopenic purpura is an acquired immune-mediated disorder defined as isolated thrombocytopenia not found to have another cause. Treatment is usually restricted to severe thrombocytopenic cases (platelet count $< 50{,}000/mm^3$) unless there is evidence of acute bleeding. Corticosteroids are considered the first-line therapy (SOR C). Intravenous immunoglobulin and rituximab have also been used as first-line agents. Second-line therapies include thrombopoietin-receptor agonists and splenectomy. Further evaluation, including a bone marrow biopsy, to rule out myelodysplastic syndrome and lymphoproliferative disorders is indicated in patients over the age of 60 (SOR C). Platelet transfusion is not indicated in the absence of hemorrhage or a need for surgery.

Ref: Sharma S, Sharma P, Tyler LN: Transfusion of blood and blood products: Indications and complications. Am Fam Physician 2011;83(6):719-724. 2) Gauer RL, Braun MM: Thrombocytopenia. Am Fam Physician 2012;85(6):612-622.

Item 87

ANSWER: B

Azithromycin should be considered the preferred agent for the treatment and prophylaxis of pertussis (SOR A). Trimethoprim/sulfamethoxazole is an alternative in cases of allergy or intolerance to macrolides. Because of the possibility of treatment benefit, and because of the potential of antibiotics to decrease transmission, the CDC continues to recommend antibiotics for the treatment of pertussis. In order to prevent transmission of the infection, treatment should be initiated within 6 weeks of the onset of cough in patients younger than 12 months, and within 3 weeks in all other patients.

Ref: Kline JM, Lewis WD, Smith EA, et al: Pertussis: A reemerging infection. Am Fam Physician 2013;88(8):507-514.

Item 88

ANSWER: D

Plaque psoriasis is characterized by silvery-white scales adhered to well demarcated erythematous papules and/or plaques, typically on the scalp, extensor surfaces of the elbows and knees, or buttocks, and often extending to other exposed areas of the body. When limited to skin folds or the genital region, psoriasis can easily be confused with other conditions such as bacterial or fungal intertrigo. The lesions in this variant, known as flexural or inverse psoriasis, usually appear smooth and moist to the point of maceration, often with minimal to no scaling. Affected patients may report significant pruritus and an unpleasant odor in the involved area. Evidence-based data for treatment options is limited but supports topical application of mild corticosteroid creams, vitamin D preparations, or coal tar products. Medium- or higher-potency corticosteroid creams are best avoided, as the affected areas are either delicate, occlusive, or both, and susceptible to corticosteroid-induced atrophy.

Ref: Kalb RE, Bagel J, Korman NJ, et al: Treatment of intertriginous psoriasis: From the Medical Board of the National Psoriasis Foundation. J Am Acad Dermatol 2009;60(1):120-124. 2) Meeuwis KA, de Hullu JA, Massuger LF, et al: Genital psoriasis: A systematic literature review on this hidden skin disease. Acta Derm Venereol 2011;91(1):5–11. 3) Wilmer EN, Hatch RL: Resistant “candidal intertrigo”: Could inverse psoriasis be the true culprit? J Am Board Fam Med 2013;26(2):211-214.

Item 89

ANSWER: B

The JNC 8 panel recommends a goal blood pressure of 150/90 mm Hg in patients age 60 and older with no comorbidities (SOR A). For those younger than 60 with no comorbidities the recommended goal is $<$140/90 mm Hg. For patients with diabetes mellitus or chronic renal disease the goal is $<$140/90 mm Hg for patients age 18 or older (SOR C).

Ref: Mahvan TD, Mlodinow SG: JNC 8: What's covered, what's not, and what else to consider. J Fam Pract 2014;63(10):574-584.

Item 90

ANSWER: B

Although family physicians do not prescribe chemotherapy, they are often called upon by families to help navigate the choices specialists offer. Patients who receive palliative chemotherapy for end-stage cancers are less likely to die at home, more likely to undergo CPR, and more likely to undergo mechanical ventilation. In addition, these patients are referred to hospice later and there is no survival benefit.

Ref: Wright AA, Zhang B, Keating NL, et al: Associations between palliative chemotherapy and adult cancer patients' end of life care and place of death: Prospective cohort study. BMJ 2014;348:g1219.

Item 91

ANSWER: C

Meningococcal disease remains a leading cause of sepsis and meningitis. Those in close contact with patients who have presumptive meningococcal disease are at heightened risk. While secondary cases have been reported, they are rare because of prompt chemoprophylaxis of household members and anyone directly exposed to the index patient's oral secretions. The risk for secondary disease among close contacts is highest during the first few days after the onset of illness in the index patient, mandating immediate chemoprophylaxis of those exposed. There is no need to isolate family members. The delay in immunity post vaccination makes it necessary to use other preventive measures instead.

Ref: Bilukha OO, Rosenstein N; National Center for Infectious Diseases, Centers for Disease Control and Prevention (CDC): Prevention and control of meningococcal disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2005;54(RR-7):1-21. 2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, pp 2485-2489.

Item 92

ANSWER: B

This patient most likely has a mild to moderate COPD exacerbation. His vital signs do not indicate a serious condition at this time, so he can be treated as an outpatient. Since he is already on a reasonable dose of an inhaled bronchodilator/anticholinergic combination, he should be treated with an oral antibiotic and an oral corticosteroid. Intravenous corticosteroids offer no advantages over oral therapy, provided there are no gastrointestinal tract limitations such as poor motility or absorption.

Oral corticosteroid therapy initiated early in a COPD exacerbation reduces the rate of treatment failure, decreases hospitalization rates, improves hypoxia and pulmonary function, and shortens the length of stay for patients requiring hospitalization. Short courses of oral corticosteroids (5–7 days) are as effective as longer ones (SOR A). Inhaled corticosteroids are ineffective in the treatment of a COPD exacerbation. Intramuscular dexamethasone has no role in treating COPD.

Ref: Evensen AE: Management of COPD exacerbations. Am Fam Physician 2010;81(5):607-613, 616. 2) Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease. Global Initiative for Chronic Obstructive Lung Disease, 2015. 3) Slawson D: Five-day steroid treatment effective for acute COPD exacerbation. Am Fam Physician 2013;88(11):744A.

Item 93

ANSWER: D

Diarrhea has several causes, requiring different management. In many cases the diarrhea is caused by a viral or bacterial infection that is self-limited and requires only supportive measures. In some cases, however, antibiotic treatment may be needed and it is important to determine the cause of the diarrhea.

Patients who have recently been hospitalized for antibiotic treatment are susceptible to infection with Clostridium difficile, and should be treated with metronidazole. Travelers to less developed countries often develop travelers' diarrhea from ingesting contaminated food or water. This is most often due to enterotoxigenic Escherichia coli, although travelers can also have Norovirus infections. The most appropriate antibiotic choice in this situation is ciprofloxacin.

Patients who become ill after an event where food is served and several attendees have similar symptoms should be suspected of having a Campylobacter infection if the symptoms include bloody diarrhea. This should also be treated with ciprofloxacin.

Daycare workers are susceptible to giardiasis, with symptoms including bloating, flatulence, and foul-smelling stools. This can be treated with metronidazole.

Ref: Barr W, Smith A: Acute diarrhea. Am Fam Physician 2014;89(3):180-189.

Item 94

ANSWER: B

The U.S. Preventive Services Task Force recommends that the selective estrogen receptor modulators tamoxifen and raloxifene be offered to women at high risk for breast cancer and low risk for adverse medication effects (B recommendation). This reduces the incidence of invasive breast cancer by 7–9 events per 1000 women over 5 years. Tamoxifen has been shown to be more beneficial than raloxifene.

Potential harms include an increase of 4–7 events of venous thromboembolism per 1000 women over 5 years. Tamoxifen increases the risk more than raloxifene. Tamoxifen also reduces bone fractures but increases the incidence of endometrial cancer, leg cramps, bladder control issues, vasomotor symptoms, and vaginal dryness, itching, and discharge.

Ref: Nelson HD, Smith ME, Griffin JC, Fu R: Use of medications to reduce risk for primary breast cancer: A systematic review for the US Preventive Services Task Force. Ann Intern Med 2013;158(8):604-614.

Item 95

ANSWER: D

The protein and lactate dehydrogenase (LDH) levels in pleural fluid can help differentiate between transudative and exudative effusions. Light's criteria (pleural fluid protein to serum protein ratio >0.5, pleural fluid LDH to serum LDH ratio >0.6, and/or pleural LDH >0.67 times the upper limit of normal for serum LDH) are 99.5% sensitive for diagnosing exudative effusions and differentiate exudative from transudative effusions in 93%–96% of cases. Of the listed pleural effusion etiologies, only pulmonary embolism is exudative. The remainder are all transudative.

Ref: Saguil A, Wyrick K, Hallgren J: Diagnostic approach to pleural effusion. Am Fam Physician 2014;90(2):99-104.

Item 96

ANSWER: D

The intrauterine device (IUD) is a safe and effective method of contraception. There are two main classes of IUDs: the copper T 380A IUD and the levonorgestrel-releasing IUD (14 or 20 μg). There are few contraindications to their use but in certain conditions one class is preferred over the other (SOR C).

Women with severe cirrhosis or liver cancer should not use the levonorgestrel-releasing IUD, and the copper T is preferred. Hormonal contraceptives in general should be avoided in women with severe liver disease, as there is a known association between oral contraceptive use and the growth of hepatocellular adenoma, and this risk is thought to extend to other types of hormonal contraceptives (SOR C). Breast cancer is another contraindication to use of the levonorgestrel-releasing IUD, and the copper T would be preferred.

There is no difference in risk between the copper T and levonorgestrel-releasing IUD with regard to deep vein thrombosis/pulmonary embolism. However, the IUD is preferable to contraceptives containing estrogen.

IUDs can be used in nulliparous women and either type may be used, although there is some evidence that there are fewer complications with the levonorgestrel-releasing IUD.

Smoking does not preclude the use of either type of IUD. Patients with heart failure may use either type of IUD as well. Women with controlled hypertension may use either form, but there is a slight risk from use of the levonorgestrel-releasing IUD in women with uncontrolled hypertension, although the benefits outweigh the risks.

Ref: Centers for Disease Control and Prevention (CDC): US medical eligibility criteria for contraceptive use, 2010. MMWR Recomm Rep 2010;59(RR-4):1-86. 2) Tepper NK, Steenland MW, Marchbanks PA, Curtis KM: Laboratory screening prior to initiating contraception: A systematic review. Contraception 2013;87(5):645-649. 3) Hardeman J, Weiss BD: Intrauterine devices: An update. Am Fam Physician 2014;89(6):445-450.

Item 97

ANSWER: E

A teaspoon of honey, given alone or in a noncaffeinated liquid before bed, has been shown to reduce the severity and frequency of coughing. It improves the sleep of both the child and the parents. Placebo was also effective in one study, but not as effective as honey. Honey should not be given to children younger than 12 months of age because of the risk of botulism, although this risk is very small.

Ref: Ebell MH, Grad R: Top 20 research studies of 2012 for primary care physicians. Am Fam Physician 2013;88(6):380-386.

Item 98

ANSWER: A

Long-term medication-assisted treatment for narcotic addiction is more successful than detoxification programs (SOR A). One study reported 49% of patients with minimal or no opiate use after 12 weeks of buprenorphine/naloxone treatment as opposed to only 7% of those undergoing a brief taper. Methadone is the drug of choice for pregnant women, with no long-term harmful effects noted. Diversion is reported but is not frequent. Treatment with opioid agonists does not clearly diminish cocaine abuse (SOR C).

Ref: Hill KP, Rice LS, Connery HS, Weiss RD: Diagnosing and treating opioid dependence. J Fam Pract 2012;61(10):588-597.

Item 99

ANSWER: C

The umbilicus normally contains 2 arteries and 1 vein. A single artery is found in up to 1% of newborns, and may be associated with renal abnormalities.

Ref: Fuloria M, Kreiter S: The newborn examination: Part II. Emergencies and common abnormalities involving the abdomen, pelvis, extremities, genitalia, and spine. Am Fam Physician 2002;65(2):265-270. 2) Gleason CA, Devaskar SU (eds): Avery's Diseases of the Newborn, ed 9. Elsevier Saunders, 2012, p 50.

Item 100

ANSWER: E

It is estimated that 3%–10% of infants and toddlers refuse to eat, according to their caregivers. Unlike other feeding problems such as colic, this problem tends to persist without intervention. It is recommended that caregivers establish routines for healthy scheduled meals and snacks, and follow them consistently. Parents should control what, when, and where children are being fed, whereas children should control how much they eat at any given time in accordance with physiologic signals of hunger and fullness. No food or drinks other than water should be offered between meals or snacks. Food should not be offered as a reward or present. Parents can be reassured that a normal child will learn to eat enough to prevent starvation. If malnutrition does occur, a search for a physical or mental abnormality should be sought.

Ref: Bernard-Bonnin AC: Feeding problems of infants and toddlers. Can Fam Physician 2006;52(10):1247-1251. 2) Kerzner B, Milano K, MacLean WC Jr, et al: A practical approach to classifying and managing feeding difficulties. Pediatrics 2015;135(2):344-353.

Item 101

ANSWER: E

Trochanteric bursitis develops insidiously after repetitive use, and the patient may report morning stiffness and pain when lying on the affected side. Palpation of the greater trochanter elicits tenderness, and occasionally swelling may be noted as well. Early injection with a corticosteroid usually produces a satisfactory response.

Ref: Cardone DA, Tallia AF: Diagnostic and therapeutic injection of the hip and knee. Am Fam Physician 2003;67(10):2147-2152. 2) Wilson JJ, Furukawa M: Evaluation of the patient with hip pain. Am Fam Physician 2014;89(1):27-34.

Item 102

ANSWER: E

Renal artery stenosis may be present in as many as 5% of patients with hypertension. It is often seen in those who have coronary artery disease and/or peripheral vascular disease. Hypertension requiring four or five drugs to control, abdominal bruits, and development of hyperkalemia or renal insufficiency after initiating therapy with an ACE inhibitor can all point toward renal artery stenosis as a diagnosis.

For patients with renal artery stenosis who have good control, no testing is necessary other than monitoring renal function, particularly if an ACE inhibitor or ARB is part of the regimen. Screening tests recommended by clinical guidelines include duplex ultrasonography, CT angiography, or MR cystography (SOR B). Captopril renography was used in the past but is no longer recommended.

In the 1990s uncontrolled studies were done that suggested that either stenting or angioplasty resulted in significant blood pressure reduction and reduced renal failure. However, a clinical trial has shown that stenting did not benefit patients when added to comprehensive multifactorial medical therapy.

Ref: Viera AJ, Neutze DM: Diagnosis of secondary hypertension: An age-based approach. Am Fam Physician 2010;82(12):1471-1478. 2) Cooper CJ, Murphy TP, Cutlip DE, et al: Stenting and medical therapy for atherosclerotic renal-artery stenosis. N Engl J Med 2014;370(1):13-22. 3) Weber BR, Dieter RS: Renal artery stenosis: Epidemiology and treatment. Int J Nephrol Renovasc Dis 2014;7:169-181.

Item 103

ANSWER: A

In patients with community-acquired pneumonia it is necessary to decide on both the antibiotic regimen and the treatment setting. The decision regarding site of care is based on the severity of illness, which can be assessed with tools such as the CURB-65 score, which take into account factors such as respiratory rate, blood pressure, uremia, confusion, and age.

Patients who have only mild symptoms can be treated with azithromycin on an outpatient basis if there is a low level of macrolide resistance in the community. If there is a high level of resistance in the community, if the patient has comorbidities such as diabetes mellitus or COPD, or if there is a history of use of an immunosuppressing drug or recent use of an antibiotic, the patient can still be treated as an outpatient but should be treated with levofloxacin. Patients with more severe symptoms, such as an elevated pulse rate or respiratory rate, should be treated on an inpatient basis with ceftriaxone or azithromycin. Patients who have more severe symptoms along with bronchiectasis should be treated with piperacillin/tazobactam plus levofloxacin.

Patients with the most severe symptoms, including hypotension, a more elevated pulse rate, low oxygen saturation, and confusion, should be treated in the intensive-care unit with levofloxacin and vancomycin.

Ref: Mandell LA, Wunderink RG, Anzueto A, et al; Infectious Diseases Society of America; American Thoracic Society: Infectious Diseases Society of America/American Thoracic Society consensus guidelines on the management of community-acquired pneumonia in adults. Clin Infect Dis 2007;44(Suppl 2):S27-S72.

Item 104

ANSWER: C

In children, neck masses usually fall into one of three categories: developmental, inflammatory/reactive, or neoplastic. The history and physical examination can help narrow the diagnosis, with location of the mass being particularly helpful.

Branchial cleft cysts make up approximately 20% of neck masses in children. They commonly present in late childhood or adulthood, when a previously unrecognized cyst becomes infected. They are most frequently found anterior to the sternocleidomastoid muscle, but can also be preauricular.

Thyroglossal duct cysts are located in the midline over the hyoid bone. Frequently, they elevate when the patient swallows. Dermoid cysts are usually mobile, moving with the overlying skin. They can be located in the submental or midline region. Thyroid tumors are also usually located in the midline. Malignant masses are usually hard, irregular, nontender, and fixed.

Ref: Bluestone CD, Stool SE, Alper CM, et al (eds): Pediatric Otolaryngology, ed 4. WB Saunders, 2003, pp 1629-1647. 2) Acierno SP, Waldhausen JH: Congenital cervical cysts, sinuses and fistulae. Otolaryngol Clin North Am 2007;40(1):161-176. 3) Meier JD, Grimmer JF: Evaluation and management of neck masses in children. Am Fam Physician 2014;89(5):353-358.

Item 105

ANSWER: E

The treatment of rhabdomyolysis includes rapid large infusions of isotonic saline to prevent and treat acute kidney injury, which occurs in 10%–60% of patients. Sodium bicarbonate administration is unnecessary and is not better than normal saline diuresis and increasing urine pH. Loop diuretics and mannitol have little human evidence to support their use. Corticosteroid use is not recommended.

Ref: Zimmerman JL, Shen MC: Rhabdomyolysis. Chest 2013;144(3):1058-1065.

Item 106

ANSWER: C

Antibiotic prophylaxis should be used for high-risk bite wounds. Factors associated with a high risk include a bite on an extremity with underlying venous and/or lymphatic compromise, a bite involving the hand, a bite near or in a prosthetic joint, cat bites, crush injuries, delayed presentation, puncture wounds, underlying diabetes mellitus, and immunosuppression. A Cochrane review of nine trials showed no statistical difference in infection rates between prophylaxis and no treatment, except when the bite wound was on the hand. The role of tetanus and rabies prophylaxis should be considered on a case-by-case basis. The other factors listed do not influence whether or not an antibiotic should be prescribed (SOR B).

Ref: Ellis R, Ellis C: Dog and cat bites. Am Fam Physician 2014;90(4):239-243.

Item 107

ANSWER: D

Hypertension is the most common manifestation of autosomal dominant polycystic kidney disease and it also contributes to worsening renal function and an increased risk for cardiovascular disease and death. ACE inhibitors such as lisinopril are first-line agents because they have renal protective benefits in addition to their effects on blood pressure. Some studies have suggested they help slow the decline in renal function and help to prevent left ventricular hypertrophy (more so than diuretics or calcium channel blockers). Angiotensin receptor blockers should be reserved for those who cannot tolerate ACE inhibitors.

Ref: Torres VE, Harris PC, Pirson Y: Autosomal dominant polycystic kidney disease. Lancet 2007;369(9569):1287–1301. 2) Srivastava A, Patel N: Autosomal dominant polycystic kidney disease. Am Fam Physician 2014;90(5):303-307.

Item 108

ANSWER: A

The American College of Rheumatology has defined diagnostic criteria for fibromyalgia based on the patient's symptoms (SOR A). Previously, tender points on examination were the diagnostic criterion. Laboratory testing, muscle biopsies, and electromyography can be used to rule out other conditions.

Ref: Kodner C: Common questions about the diagnosis and management of fibromyalgia. Am Fam Physician 2015;91(7):472-478.

Item 109

ANSWER: C

Sympathomimetic agents can elevate blood pressure and intraocular pressure, may worsen existing urinary obstruction, and adversely interact with β-blockers, methyldopa, tricyclic antidepressants, oral hypoglycemic agents, and MAOIs. They also speed up the heart rate. First-generation nonprescription antihistamines can enhance the anticholinergic and sedative effects of other medications.

Ref: Brunton LL (ed): Goodman & Gilman's The Pharmacological Basis of Therapeutics, ed 12. McGraw-Hill, 2011, p 302. 2) Young SS: Appropriate Use of Common OTC Analgesics and Cough and Cold Medications. American Academy of Family Physicians monograph, 2008.

Item 110

ANSWER: B

Taking oral iron with vitamin C or a meal high in meat protein increases iron absorption. Calcium and coffee both decrease iron absorption, but not as much as tea, which can reduce absorption of oral iron by as much as 90%.

Ref: DeLoughery TG: Microcytic anemia. N Engl J Med 2014;371(14):1324-1331.

Item 111

ANSWER: B

The hemoglobin A_{1c} (HbA_{1c}) blood test provides information regarding average glucose levels over the past 3 months. Any condition that shortens erythrocyte survival or decreases mean erythrocyte age, such as recent acute blood loss or hemolytic anemia, will falsely lower HbA_{1c} levels. Hemoglobin variants and iron deficiency, kidney failure, and liver disease can also affect HbA_{1c} results. Heart failure, COPD, and hypothyroidism do not influence HbA_{1c} values.

Ref: The A_{1c} test and diabetes. National Diabetes Information Clearinghouse, NIH pub no 14-7816, 2014. 2) Sickle cell trait and other hemoglobinopathies and diabetes: Important information for providers. National Diabetes Information Clearinghouse, NIH pub no 14-6287, 2014. 3) For people of African, Mediterranean, or Southeast Asian heritage: Important information about diabetes blood tests. National Diabetes Information Clearinghouse, NIH pub no 12-6283, 2011. 4) National Glycohemoglobin Standardization Program (NGSP): Factors that interfere with HbA_{1c} test results. NGSP, 2015.

Item 112

ANSWER: E

The physiologic changes that accompany aging result in altered pharmacokinetics. In older persons there is a relative increase in body fat and a relative decrease in lean body mass, which causes increased distribution of fat-soluble drugs such as diazepam. This also increases the elimination half-life of such medications. The volume of distribution of water-soluble compounds such as digoxin is decreased in older patients, which means a smaller dose is required to reach a given target plasma concentration. There is also a predictable reduction in glomerular filtration rate and tubular secretion with aging, which causes decreased clearance of medications in the geriatric population. The absorption of drugs changes little with advancing age. All of these changes are important to consider when choosing dosages of medications for the older patient.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, pp 129-130.

Item 113

ANSWER: E

NSAIDs cause an elevation of blood pressure due to their salt and water retention properties. This effect can also lead to edema and worsen underlying heart failure. In addition, all NSAIDs can have a deleterious effect on kidney function and can worsen underlying chronic kidney disease, in addition to precipitating acute kidney injury. Celecoxib, ibuprofen, meloxicam, and diclofenac are associated with an increased risk of cardiovascular adverse effects and myocardial infarction, compared with placebo. However, naproxen has not been associated with an increased risk of myocardial infarction and is therefore preferred over other NSAIDs in patients with underlying coronary artery disease risk factors (SOR B).

Ref: Fogleman CD: Analgesics for osteoarthritis. Am Fam Physician 2013;87(5):354-356.

Item 114

ANSWER: B

This patient has examination findings that strongly suggest a peritonsillar abscess, which is the most common deep infection of the head and neck in young adults. Although antibiotics are indicated in this case, the cornerstone of management is drainage of the abscess either by needle drainage or by incision and drainage. Immediate tonsillectomy is less favored, as it is a less cost-effective option.

Ref: Galioto NJ: Peritonsillar abscess. Am Fam Physician 2008;77(2):199-202. 2) Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine: A Comprehensive Study Guide, ed 7. McGraw-Hill, 2011, pp 795-796.

Item 115

ANSWER: A

This patient meets the clinical criteria for Henoch-Schönlein purpura (HSP), an immune-mediated vasculitis found commonly in children under the age of 10. The clinical triad of purpura, abdominal pain, and arthritis is classic.

Almost 95% of children with HSP spontaneously improve, so supportive therapy is the main intervention. Acetaminophen or ibuprofen can be used for the arthritic pain. However, ibuprofen should be avoided in those with abdominal pain or known renal involvement. Prednisone has been found to help in those with renal involvement or other complications of the disease such as significant abdominal pain, scrotal swelling, or severe joint pains (SOR B). However, it is not effective for preventing renal disease or reducing the severity of renal involvement, as was once thought (SOR A).

Immunosuppressants such as cyclophosphamide and cyclosporine have been suggested for treating patients with severe renal involvement, but there is insufficient evidence to support their use. Amoxicillin is appropriate for patients with a bacterial infection, such as streptococcal pharyngitis, which has led to HSP. In this patient, however, there is no indication of pharyngitis or another bacterial focus. Patients with renal involvement and resultant hypertension with HSP should be treated with calcium channel blockers such as amlodipine. This patient exhibits neither renal involvement nor hypertension.

Ref: Chartapisak W, Opastirakul S, Hodson EM, et al: Interventions for preventing and treating kidney disease in Henoch-Schönlein purpura (HSP). Cochrane Database Syst Rev 2009;(3):CD005128. 2) Reamy BV, Williams PM, Lindsay TJ: Henoch-Schönlein purpura. Am Fam Physician 2009;80(7):697-704. 3) Fleisher GR, Ludwig S (eds): Textbook of Pediatric Emergency Medicine, ed 6. Lippincott Williams & Wilkins, 2010, pp 1117-1118.

Item 116

ANSWER: D

Acute laryngitis most often has a viral etiology and symptomatic treatment is therefore most appropriate. A Cochrane review concluded that antibiotics appear to have no benefit in treating acute laryngitis. Proton pump inhibitors such as omeprazole can be of benefit in treating chronic laryngitis caused by acid reflux, but not for an acute problem such as the one described.

Ref: Reveiz L, Cardona AF: Antibiotics for acute laryngitis in adults. Cochrane Database Syst Rev 2013;(3):CD004783.

Item 117

ANSWER: A

Low back pain is one of the most common reasons for visits to physicians. The workup should start with a thorough history and physical examination to determine whether the patient has nonspecific back pain, back pain possibly related to radiculopathy or spinal stenosis, or back pain due to some other specific cause. Nonspecific back pain does not require imaging (SOR B). An initial plain film would be appropriate if there were a history of recent significant trauma, or even a history of minor trauma in an elderly patient. Immediate MRI would be appropriate in the presence of other red flags such as bladder dysfunction, areflexia, saddle anesthesia, progressive motor weakness, a history of cancer, or the presence of fever, unexplained weight loss, or night sweats.

Ref: Chou R, Qaseem A, Snow V, et al; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel: Diagnosis and treatment of low back pain: A joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med 2007;147(7):478-491. 2) Last AR, Hulbert K: Chronic low back pain: Evaluation and management. Am Fam Physician 2009;79(12):1067-1074.

Item 118

ANSWER: A

Hyperaldosteronism, usually caused by a hyperaldosterone-secreting adrenal mass, has to be considered in a middle-aged patient with resistant hypertension and hypokalemia. Peripheral aldosterone concentration (PAC) and peripheral renin activity (PRA), preferably after being upright for 2 hours, are the preferred screening tests for hyperaldosteronism. A PAC $>$ 15 ng/dL and a PAC/PRA ratio $>$ 20 suggest an adrenal cause. Abdominal CT may miss adrenal hyperplasia or a microadenoma. Renal CT angiography is useful for detecting renal artery stenosis. If the PAC/PRA is abnormal, an aldosterone suppression test should be ordered.

Ref: Viera AJ, Neutze DM: Diagnosis of secondary hypertension: An age-based approach. Am Fam Physician 2010;82(12):1471-1478.

Item 119

ANSWER: C

A patient with known adrenal insufficiency secondary to hypopituitarism who is undergoing a period of stress such as illness or surgery should be given intravenous corticosteroids. For moderate-risk procedures such as vascular or orthopedic operations, 50 mg of hydrocortisone is recommended. For major surgery, such as open heart surgery or an esophagectomy, 100 mg of hydrocortisone would be needed. These doses can be repeated every 8 hours until the patient is stable and is able to take his usual oral maintenance dose.

Thyroid replacement is not required for short-term situations, and ACTH is not recommended. If the patient becomes hypotensive a bolus of normal saline may be indicated. However, in a stable patient undergoing elective surgery, only routine hydration is indicated.

Ref: Marik PE, Varon J: Requirement of perioperative stress doses of corticosteroids: A systematic review of the literature. Arch Surg 2008;143(12):1222-1226. 2) Kohl BA, Schwartz S: Surgery in the patient with endocrine dysfunction. Med Clin North Am 2009;93(5):1031-1047.

Item 120

ANSWER: C

Periodic developmental screening is essential for the early recognition of neuromuscular disorders and motor delays in children. Multiple developmental screening tools are available for primary care physicians to use. Motor development should progress throughout infancy and childhood. Either failure to adequately progress or signs of regression should be cause for concern and raise the suspicion for a neuromuscular disorder such as muscular dystrophy.

Infants should roll from prone to supine by 4 months of age and supine to prone by 6 months of age. They should be able to get themselves into a sitting position by 9 months of age. While low muscular tone in an infant suggests muscular dystrophy, high muscle tone is concerning for an upper motor neuron condition and should be evaluated with MRI.

A 15-month-old who is unable to rise to a standing position without using his hands should have a creatine kinase (CK) level obtained—this is the classic Gower's sign. Although many children walk unassisted by 12 months, CK levels should not be obtained (unless indicated for other reasons) unless a male child is not walking by 18 months of age.

Ref: Bushby K, Finkel R, Birnkrant DJ, et al: Diagnosis and management of Duchenne muscular dystrophy, part 1: Diagnosis, and pharmacological and psychosocial management. Lancet Neurol 2010;9(1):77-93. 2) Noritz GH, Murphy NA; Neuromotor Screening Expert Panel: Motor delays: Early identification and evaluation. Pediatrics 2013;131(6):e2016-e2027. 3) Lurio JG, Peay HL, Mathews KD: Recognition and management of motor delay and muscle weakness in children. Am Fam Physician 2015;91(1):38-44.

Item 121

ANSWER: B

This patient meets the criteria for Kawasaki disease, also known as mucocutaneous lymph node syndrome. It is an acute type of vasculitis that predominantly affects small and medium-size vessels and is the most common cause of acquired coronary artery disease in childhood.

Diagnostic criteria include fever for at least 5 days and at least 4 of the 5 principal clinical features:

- changes of the oral cavity and lips
- polymorphous rash
- bilateral nonpurulent conjunctivitis
- changes in the extremities (erythema followed by desquamation)
- cervical lymphadenopathy

Coronary abnormalities, including coronary aneurysms, are the most concerning sequelae of Kawasaki disease and may occur in the first week. For this reason early cardiac evaluation is recommended, with transthoracic echocardiography being the preferred initial imaging. Radionuclide imaging can be useful in assessing cardiac perfusion in patients found to have persisting echocardiographic findings. MR coronary angiography can be used to assess response to treatment over time. Intravenous immunoglobulin and corticosteroids reduce the risk of coronary abnormalities and should be administered as soon as the disease is suspected.

Ref: Saguil A, Fargo M, Grogan S: Diagnosis and management of Kawasaki disease. Am Fam Physician 2015;91(6):365-371.

Item 122

ANSWER: C

Electronic cigarettes (e-cigarettes) are not currently regulated by the FDA. The amount of particulate matter released into the air by low-nicotine e-cigarettes is comparable to that released by tobacco cigarettes, while higher-nicotine e-cigarettes release more particulate matter. E-cigarettes have various concentrations of nicotine in solution. While the number of tobacco cigarettes smoked per day is decreased in e-cigarette users, this has not yet been shown to lead to smoking cessation. There are no studies of e-cigarettes in pregnant women, and nicotine is contraindicated during pregnancy.

Ref: Grana R, Benowitz N, Glantz SA: E-cigarettes: A scientific review. Circulation 2014;129(19):1972-1986.

Item 123

ANSWER: A

Cardiovascular disease, in particular ischemic heart disease, has now become the leading cause of human deaths worldwide. It was once considered a disease of the wealthy, but now more than 80% of deaths from noncommunicable diseases occur in low- to middle-income countries. The other conditions listed remain among the top 10 causes of human deaths worldwide, along with stroke, lower respiratory infections, COPD, diabetes mellitus, and road deaths.

Ref: Fuster VF, Narula J, Vedanthan R, Kelly BB (eds): Promoting Global Cardiovascular Health: Perspective on the 12 Recommendations of the Institute of Medicine. Scientific American Custom Media, 2014, p 74. 2) The top 10 causes of death. World Health Organization, 2014, Fact Sheet no 310.

Item 124

ANSWER: D

This patient has symptoms consistent with hyperthyroidism, which could be caused by any of the options listed. TSH is suppressed and free T_4 and free T_3 are elevated in all of these conditions. Only Graves disease, however, will cause high radioactive iodine uptake on a thyroid scan. Uptake will be low in the other conditions.

Ref: Sweeney LB, Stewart C, Gaitonde DY: Thyroiditis: An integrated approach. Am Fam Physician 2014;90(6):389-396.

Item 125

ANSWER: D

This patient meets the criteria for severe inflammatory response syndrome (SIRS) (fever $>38.5°C$, heart rate >90 beats/min, respiratory rate >20/min, WBC count $>12{,}000/mm^3$). He also meets the criteria for severe sepsis, with a positive chest radiograph and evidence of organ hypoperfusion (mental status changes), as well as septic shock (mean arterial pressure <60 mm Hg). The most appropriate initial treatment for patients with hypotension in septic shock is fluid resuscitation (SOR A). While vasopressor therapy is certainly appropriate in septic shock, it should be initiated only after fluid resuscitation fails to restore mean arterial pressure (>65 mm Hg) or when there is evidence of continued organ hypoperfusion. Appropriate antibiotics to cover community-acquired pneumonia are recommended during the first hour of presentation in sepsis (SOR B) but will likely have little effect on acute hypotension. Packed red blood cell transfusion is not indicated in this scenario, as the patient's hemoglobin is above 7 g/dL.

Ref: Gauer RL: Early recognition and management of sepsis in adults: The first six hours. Am Fam Physician 2013;88(1):44-53.

Item 126

ANSWER: E

This patient has symptoms and findings consistent with acute compartment syndrome, which is an emergency. The diagnostic test is tissue pressure studies. This condition can occur after a severe injury to the extremity, although it can also develop after a relatively minor injury. Associated problems include fractures, a badly bruised muscle, crush injuries, constricting bandages, and bites with swelling.

Ref: Wall CJ, Lynch J, Harris IA, et al: Clinical practice guidelines for the management of acute limb compartment syndrome following trauma. ANZ J Surg 2010;80(3):151-156.

Item 127

ANSWER: B

It is of critical importance that patients have a documented negative HIV antibody test (from serum or point-of-care fingerstick) prior to starting pre-exposure prophylaxis (PrEP) to avoid inadvertent treatment of HIV infection with emtricitabine/tenofovir. This is the only medication currently approved in the United States for PrEP, but it is inadequate for HIV treatment. Using this treatment by itself in HIV-positive patients increases the risk of HIV strains developing resistance to these antiviral agents.

Other recommended testing prior to PrEP use includes creatinine clearance calculation, hepatitis B antibody testing, screening for sexually transmitted diseases, and pregnancy testing in females capable of pregnancy. The CDC does not recommend testing liver function, hemoglobin, or platelet levels prior to PrEP use in otherwise healthy individuals.

Ref: US Public Health Service: Preexposure Prophylaxis for the Prevention of HIV Infection in the United States—2014. A Clinical Practice Guideline. Centers for Disease Control and Prevention, 2014.

Item 128

ANSWER: A

The 2012 American College of Chest Physicians evidenced-based clinical practice guidelines recommend early ambulation over initial bed rest in patients with acute DVT of the leg (SOR C). If edema and pain are severe, ambulation may need to be deferred. Several studies and meta-analyses have shown there is no statistically significant difference between ambulation and bed rest for development of a pulmonary embolus, a new thrombus, or progression of a thrombus. Therefore, based on the evidence and the well-recognized benefits of mobility, the current recommendation is to consider early ambulation as soon as effective anticoagulation has been achieved.

Ref: Guyatt GH, Akl EA, Crowther M, et al; American College of Chest Physicians Antithrombotic Therapy and Prevention of Thrombosis Panel: Executive summary: Antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest 2012;141(2 Suppl):7S-47S.

Item 129

ANSWER: A

Of the bioterrorism agents listed, only anthrax requires 60 days of antibiotic treatment (SOR B). If used in an intentional attack, anthrax spores would be released into the air to be inhaled by the target population. The full incubation period of the bacterium is 60 days and treatment should cover the entire period. Appropriate antibiotics include oral fluoroquinolones and doxycycline.

Smallpox is a result of infection with the variola virus. Potential treatments include postexposure treatment with the smallpox vaccine and two compounds currently in development. Pneumonic plague, caused by Yersinia pestis, can be provoked by inhalation of the released bacterium or by contact with an infected individual. Treatment consists of a 10-day course of an aminoglycoside or doxycycline.

Inhalational botulism is treated with an antitoxin (equine-derived heptavalent antitoxin). Tularemia could be caused by an intentional release of the bacterium Francisella tularensis, which would cause a pneumonia. Treatment is a 10-day course of an aminoglycoside, ciprofloxacin, or doxycycline.

Ref: Adalja AA, Toner E, Inglesby TV: Clinical management of potential bioterrorism-related conditions. N Engl J Med 2015;372(10):954-962.

Item 130

ANSWER: B

A single dose of dexamethasone (0.15–0.60 mg/kg, usually given orally) is recommended in all patients with croup, including those with mild disease. Humidification therapy has not been proven beneficial. Nebulized epinephrine is an accepted treatment in patients with moderate to severe croup. Subcutaneous epinephrine, diphenhydramine, and ceftriaxone are not recommended treatments.

Ref: Zoorob R, Sidani M, Murray J: Croup: An overview. Am Fam Physician 2011;83(9):1067-1073.

Item 131

ANSWER: A

H_1 and H_2 histamine blockers and corticosteroids may be useful, but they are not first-line treatments for an anaphylactic reaction to a Hymenoptera sting. Intravenous normal saline may also be necessary for fluid resuscitation, but the first treatment should be immediate administration of intramuscular epinephrine.

Ref: Casale TB, Burks AW: Hymenoptera-sting hypersensitivity. N Engl J Med 2014;370(15):1432-1439.

Item 132

ANSWER: E

Reptiles, including snakes, lizards, and turtles, cause both isolated cases of Salmonella infection and local and widespread outbreaks. While the sale of small pet turtles was outlawed in 1975, the law is not widely enforced and pet turtles are often a source of Salmonella infection in small children. The infection can also be spread by other reptiles and amphibians, including snakes and frogs. At a Colorado zoo in 1996, a total of 65 children were infected by touching a wooden barrier around a Komodo dragon exhibit. Pasteurella multocida is a common cause of infection as a result of dog or cat bites. Yersinia pestis, the organism of plague, is transmitted to humans from rodents or their fleas. Hantavirus is also transmitted by rodents, and psittacosis by certain bird species.

Ref: National Center for Emerging and Zoonotic Infectious Diseases: Reptiles, amphibians, and Salmonella. Centers for Disease Control and Prevention, 2013. 2) National Association of State Public Health Veterinarians, Inc. (NASPHV); Centers for Disease Control and Prevention (CDC): Compendium of measures to prevent disease associated with animals in public settings, 2011: National Association of State Public Health Veterinarians, Inc. MMWR Recomm Rep 2011;60(RR-04):1-24.

Item 133

ANSWER: B

Although breast milk is the ideal source of nutrition for healthy term infants, supplementation with 400 IU/day of vitamin D is recommended beginning in the first few days of life and continuing until the child is consuming at least 500 mL/day of formula or milk containing vitamin D (SOR B). The purpose of supplementation is to prevent rickets. Unless the baby is anemic or has other deficiencies, neither iron nor a multivitamin is necessary at this age. For exclusively breastfed infants, iron supplementation should begin at 4 months of age. Parents often mistakenly think babies need additional water, which can be harmful because it decreases milk intake and can cause electrolyte disturbances. The introduction of cereal is recommended at 6 months of age.

Ref: Hagan JF Jr, Shaw JS, Duncan PM (eds): Bright Futures Guidelines for Health Supervision of Infants, Children, and Adolescents, ed 3. American Academy of Pediatrics, 2008, pp 121-145. 2) Golden NH, Abrams SA; Committee on Nutrition: Optimizing bone health in children and adolescents. Pediatrics 2014;134(4):e1229-1243.

Item 134

ANSWER: A

Many older drivers have physiologic or cognitive impairment that may affect mobility and driving safety, and older drivers have an increased crash rate per mile driven. However, older individuals who stop driving are at higher risk for isolation and depression and there is also an increased cost to the family and society in general for transportation assistance.

A comprehensive assessment of the ability to drive begins with a driving history from both the patient and a passenger. Any mention of close calls, mishaps, disorientation, or becoming lost in familiar locations is an important hint at unsafe driving. It is important to ask the passenger, “Do you feel safe riding with this individual?”

In this patient a medication review would also be appropriate. His tricyclic antidepressant, benzodiazepine, and insulin could all contribute to unsafe driving. Medical illnesses should also be considered in this history. Dementia, peripheral neuropathy, and retinopathy can all increase the risk for unsafe driving.

Further testing such as a Snellen eye test, audiometry, timed gait, range of motion, muscle strength, clock drawing, and a Mini-Mental State Examination may also be indicated, but a thorough driving history should be obtained first. If a concern arises about unsafe driving, referral to a rehabilitative driving center or the appropriate government agency for further written/road testing may be warranted.

Ref: Carr DB: The older adult driver. Am Fam Physician 2000;61(1):141-146, 148. 2) Carr DB, Duchek JM, Meuser TM, Morris JC: Older adult drivers with cognitive impairment. Am Fam Physician 2006;73(6):1029-1034. 3) Colón-Emeric CS, Whitson HE, Pavon J, Hoenig H: Functional decline in older adults. Am Fam Physician 2013;88(6):388-394.

Item 135

ANSWER: B

Keloids may arise from scars that result from any cause of skin trauma or infection. Keloids, unlike hypertrophic scars, are not confined to the margins of the primary injury. Hypertrophic scars are more likely on extensor surfaces of the body, typically develop soon after the inciting injury, and are more likely to regress with time.

Ref: Kundu RV, Patterson S: Dermatologic conditions in skin of color: Part II. Disorders occurring predominately in skin of color. Am Fam Physician 2013;87(12):859-865.

Item 136

ANSWER: D

Testosterone replacement therapy can cause erythrocytosis, so monitoring hematocrit at regular intervals is recommended. Testosterone replacement therapy does not significantly affect lipid levels, and additional monitoring of these levels is not recommended. Although there have been anecdotal reports of testosterone replacement therapy being associated with sleep apnea, current recommendations do not advise routine testing with overnight polysomnography for patients on testosterone replacement. There is inconsistent evidence of the effects of testosterone replacement therapy on depression, and thus no recommendation for monitoring of mood symptoms related to testosterone therapy. Low testosterone levels have been associated with insulin resistance, but testosterone replacement therapy is not recommended as treatment for hyperglycemia. Monitoring of serum glucose while on testosterone therapy is not routinely recommended.

Ref: Bhasin S, Cunningham GR, Hayes FJ, et al: Testosterone therapy in men with androgen deficiency syndromes: An Endocrine Society clinical practice guideline. J Clin Endocrinol Metab 2010;95(6):2536-2559. 2) Basaria S: Male hypogonadism. Lancet 2014;383(9924):1250-1263.

Item 137

ANSWER: C

Osteoporosis in males can be caused by multiple conditions, including multiple myeloma, AIDS, hyperparathyroidism, and hypotestosteronism. In this patient, multiple myeloma is unlikely because of the normal erythrocyte sedimentation rate, AIDS is unlikely given his past history, and a parathyroid abnormality is unlikely since his blood chemistry results were normal. Hypotestosteronism is not an infrequent cause of osteoporosis in men.

Ref: Rao SS, Budhwar N, Ashfaque A: Osteoporosis in men. Am Fam Physician 2010;82(5):503-508.

Item 138

ANSWER: B

Physicians should avoid reacting to laboratory values without considering the clinical scenario. This patient presented with mild dehydration and normal laboratory values. Although he is improving clinically, his laboratory values show multiple unexpected results. The most noticeable is the severely elevated glucose, because he has no history of diabetes mellitus or use of medications that could cause this effect. Similarly, the elevated potassium and decreased sodium suggest profound electrolyte abnormalities. Most likely, the laboratory technician drew blood from the patient's indwelling port without discarding the first several milliliters. Thus, the blood was contaminated with intravenous fluids, leading to erroneous results. A repeat blood test from a peripheral vein should give more accurate results.

Ref: Wu AHB: Tietz Clinical Guide to Laboratory Tests, ed 4. Saunders Elsevier, 2006, p 5.

Item 139

ANSWER: A

Obstructive sleep apnea is found in 30%–40% of hypertensive patients and 60%–70% of patients with resistant hypertension, whereas primary aldosteronism is present in only 7%–20% of patients with resistant hypertension. Renal artery stenosis is seen in 2%–24% of cases of resistant hypertension in various studies, renal parenchymal disease in 2%–4%, and thyroid disease in less than 1%.

Ref: Vongpatanasin W: Resistant hypertension: A review of diagnosis and management. JAMA 2014;311(21):2216-2224.

Item 140

ANSWER: E

Reduced visual acuity may be a symptom of acute angle-closure glaucoma and requires immediate referral to an ophthalmologist. Copious mucopurulent drainage from the eye is a sign of infectious conjunctivitis, most likely bacterial, and bilateral eye redness is typically seen with allergic conjunctivitis. Allergic or infectious conjunctivitis and small corneal abrasions can be managed by the family physician. Bright red blood under the conjunctiva is consistent with a subconjunctival hemorrhage that will typically resolve without intervention.

Ref: Cronau H, Kankanala RR, Mauger T: Diagnosis and management of red eye in primary care. Am Fam Physician 2010;81(2):137-144.

Item 141

ANSWER: B

Advance directives, including a living will and durable power of attorney for health care, are used so that the desires of the individual will be followed in the event he or she lacks the capacity to participate in health care decisions. This ability refers to decision making capacity. The standards for decision making capacity vary from state to state but generally include four abilities: patients must (1) have the ability to understand the relevant information about proposed diagnostic tests or treatment, (2) appreciate their situation (including their values and current medical situation), (3) use reason to make a decision, and (4) communicate their choice.

A patient's capacity is both temporal and situational and capacity evaluations should occur in the context of the specific health care decision that needs to be made. Some patients lack capacity for specific periods of time, such as when critically ill, but not permanently. Although some people are completely incapacitated, many have limited capacity. Those with limited capacity may be able to make some diagnostic and treatment decisions (generally less risky decisions) but not others. Physicians commonly hold patients to higher standards when judging capacity for more serious medical decisions.

There is a relationship between capacity and cognition but a patient with dementia can still have decision-making capacity. With Mini-Mental State Examination scores < 20 (maximum score $= 30$) there is an increased likelihood of incapacity, but this varies from case to case and is situation dependent.

Competence is a legal term and is a judicial decision made by a court. Any licensed physician can make a determination of capacity, and a psychiatrist is not required.

Ref: Leo RJ: Competency and the capacity to make treatment decisions: A primer for primary care physicians. Prim Care Companion J Clin Psychiatry 1999;1(5):131-141. 2) Sessums LL, Zembrzuska H, Jackson JL: Does this patient have medical decision-making capacity? JAMA 2011;306(4):420-427. 3) Spoelhof GD, Elliott B: Implementing advance directives in office practice. Am Fam Physician 2012;85(5):461-466. 4) Ethics and Advance Planning for End-of-Life Care. Advance planning for health care decisions. American Academy of Family Physicians, 2013.

Item 142

ANSWER: B

Injection of glucocorticoids (usually mixed with a local anesthetic) into the subacromial space may be considered in patients with rotator cuff tendinitis if the pain is significant enough to interfere with sleep and/or function despite adequate analgesia.

An intra-articular injection is appropriate for a patient with severe shoulder osteoarthritis. A corticosteroid injection into the biceps or deltoid insertions is not appropriate. An acromioclavicular injection is appropriate for acromioclavicular arthritis but not for rotator cuff tendinitis.

Ref: Whittle S, Buchbinder R: Rotator cuff disease. Ann Intern Med 2015;162(1):ITC1-ITC15.

Item 143

ANSWER: C

The U.S. Preventive Services Task Force found that the most effective behavioral counseling interventions for obesity management were comprehensive and of high intensity (12–26 sessions in a year), and involved multiple behavioral management activities, such as group and individual sessions, setting weight-loss goals, addressing barriers to change, and active use of self-monitoring. Low-carbohydrate diets are minimally effective over the long term without behavioral interventions.

Ref: Rao G: Office-based strategies for the management of obesity. Am Fam Physician 2010;81(12):1449-1456. 2) Croswell J, Luger S: Screening for and management of obesity in adults. Am Fam Physician 2012;86(10):947-948.

Item 144

ANSWER: D

Posterior or posteromedial rib fractures are secondary to child abuse until proven otherwise, justifying notification of Child Protective Services or referral to an emergency department familiar with the appropriate workup. Osteogenesis imperfecta can cause continuous beading of the ribs and crumpled long bones such as accordina femora, and is often associated with blue sclerae, skin fragility, or brittle teeth. A skeletal survey is appropriate in a child 2 years of age or younger suspected of being physically abused. It is not thought to be necessary in children 4 years of age or older, especially in a case where suspicious fractures have already been discovered. Rickets usually is associated with long bone bowing deformities. In the chest it can cause prominence of the costochondral junctions (rachitic rosary) and indentation of the lower ribs where the diaphragm attaches (Harrison's grooves).

Ref: McDonald KC: Child abuse: Approach and management. Am Fam Physician 2007;75(2):221-228. 2) Orient JM: Sapira's Art and Science of Bedside Diagnosis, ed 4. Lippincott Williams & Wilkins, 2010, p 492. 3) Kodner C, Wetherton A: Diagnosis and management of physical abuse in children. Am Fam Physician 2013;88(10):669-675.

Item 145

ANSWER: B

The U.S. Preventive Services Task Force recommends opt-out HIV screening for all adolescents and adults 15–65 years of age (SOR A). The Centers for Disease Control recommends routine HIV screening in patients age 13–64 (SOR A). Opt-out screening is preferred to opt-in screening, as opt-in screening based on demographic, behavioral, or clinical subpopulations only identifies approximately 75% of patients with HIV. Rapid screening tests are highly accurate; however, subsequent conventional testing is necessary to confirm an HIV diagnosis.

Ref: Branson BM, Handsfield HH, Lampe MA, et al; Centers for Disease Control and Prevention (CDC): Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recomm Rep 2006;55(RR-14):1–17. 2) Moyer VA; US Preventive Services Task Force: Screening for HIV: US Preventive Services Task Force recommendation statement. Ann Intern Med 2013;159(1):51–60. 3) Sherin K, Klekamp BG, Beal J, Martin N: What is new in HIV infection? Am Fam Physician 2014;89(4):265-272.

Item 146

ANSWER: A

The 2013 ACOG guideline recommends induction of labor for gestational hypertension after 37 weeks. Identifying elevated urine protein is not required for this decision, as gestational hypertension and preeclampsia without severe features are managed in the same way at 39 weeks gestation. Twice-weekly office visits with assessment of blood pressure and the other tests mentioned may be appropriate for patients at less than 37 weeks gestation. Bed rest is no longer recommended for control of hypertension in pregnancy. Oral antihypertensives are used only at higher blood pressure readings in the setting of chronic hypertension.

Ref: American College of Obstetricians and Gynecologists; Task Force on Hypertension in Pregnancy: Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol 2013;122(5):1122-1131.

Item 147

ANSWER: A

The clinical history and laboratory findings presented are consistent with a diagnosis of narcolepsy. In addition to the sleepiness, the patient also has cataplexy, which is manifested in this case by episodes of sudden weakness when laughing and is almost pathognomonic for narcolepsy. Some patients may also have vivid hallucinations when falling asleep or waking up. Treatment involves improving both the quantity and quality of sleep during the night, which can be accomplished with sodium oxybate. This improves daytime alertness and cataplexy. Scheduling naps is the second important aspect of managing narcolepsy. The third important step is the use of stimulants such as methylphenidate to improve function during the day. Periodic daytime naps may also help to reduce symptoms. Since there is no evidence of obstructive sleep apnea in this patient, weight reduction would not be expected to address his sleep problem. In general, sedatives, hypnotics, and alcohol should be avoided.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, p 2418. 2) Ramar K, Olson EJ: Management of common sleep disorders. Am Fam Physician 2013;88(4):231-238.

Item 148

ANSWER: C

This patient meets the American College of Rheumatology's criteria for rheumatoid arthritis. The criteria use an algorithm giving a weighted score to joints involved, rheumatoid serology, acute phase reactants and duration of symptoms. Of the medications listed, oral methotrexate is the only disease-modifying antirheumatic drug, which should be part of the treatment for rheumatoid arthritis. Prednisone, aspirin, and NSAIDs are not disease-modifying and should not be used as sole agents, although they can be used for symptom relief. Doxycycline could be considered in the treatment of Lyme disease but this patient meets the criteria for rheumatoid arthritis and has negative Lyme serologies.

Ref: Wasserman AM: Diagnosis and management of rheumatoid arthritis. Am Fam Physician 2011;84(11):1245-1252.

Item 149

ANSWER: E

Interstitial lung disease is a consideration in patients with chronic dyspnea. It is often accompanied by a chronic nonproductive cough. Office spirometry is useful in detecting whether the problem is restrictive or obstructive. If the FVC is normal or decreased and the FEV_1 is decreased, an FEV_1/FVC ratio <0.7 means there is an obstructive ventilatory impairment. If the FVC is decreased and the FEV_1 is normal or decreased the ratio would be >0.7, indicating a restrictive impairment.

Diffuse parenchymal lung disease may be idiopathic, but there are a number of identified causes such as environmental or occupational exposures. Many collagen vascular diseases and medications used to treat them can induce interstitial lung disease. Common offenders also include amiodarone and nitrofurantoin, which can induce a pneumonitis. In this patient, lisinopril might explain the cough but not the dyspnea, crackles, or abnormal spirometry.

Ref: Karnani NG, Reisfield GM, Wilson GR: Evaluation of chronic dyspnea. Am Fam Physician 2005;71(8):1529-1537. 2) Johnson JD, Theurer WM: A stepwise approach to the interpretation of pulmonary function tests. Am Fam Physician 2014;89(5):359-366.

Item 150

ANSWER: D

All pregnant women should be screened for asymptomatic bacteriuria between 11 and 16 weeks gestation and should be appropriately treated if the urine culture is positive. Asymptomatic bacteriuria is a known contributor to recurrent urinary tract infections, pyelonephritis, and preterm labor. TSH levels should be checked in patients with a history of thyroid disease or symptoms of disease, but universal testing is not recommended. Although treatment of bacterial vaginosis decreases the risk of low birth weight and premature rupture of membranes, universal screening is not recommended. This patient should be screened for both group B Streptococcus (GBS) and diabetes mellitus, but not at this point in her pregnancy. GBS screening should be done between 35 and 37 weeks gestation, and diabetes screening should be performed with a 50-g glucose load between 24 and 28 weeks gestation.

Ref: Zolotor AJ, Carlough MC: Update on prenatal care. Am Fam Physician 2014;89(3):199-208.

Item 151

ANSWER: C

Evidence shows that early treatment of autism is beneficial (SOR B), and the American Academy of Pediatrics recommends screening with a validated autism-specific tool such as the MCHAT at 18 and 24 months (SOR C). Delayed social development is typically the first sign of autism. Language delay can be another finding, but it is less specific. Of the behaviors listed, only abnormal sensitivity to sound is consistent with autism. Gesturing, pretend play, mimicking, and attempting to attract caregiver attention all suggest other diagnoses.

Ref: Carbone PS, Farley M, Davis T: Primary care for children with autism. Am Fam Physician 2010;81(4):453-460.

Item 152

ANSWER: B

Stress fractures are common in teenage athletes. Because this patient has a normal physical examination and can walk without pain, she can return to basketball as long as her symptoms do not return.

Most stress fractures heal in 6–10 weeks with conservative management such as non–weight bearing and activity limitation. Athletes can return to play once they are pain free and have a normal physical examination, even if the time since diagnosis is less than 6 weeks. However, they should refrain from all high-impact activities such as running and jumping until they can walk without pain. Repeat radiographs are rarely indicated. Calcium and vitamin D supplementation are recommended as part of the management of stress fractures, but checking blood levels of vitamin D is not necessary either at the time of the injury or prior to return to play. Most stress fractures in low-risk locations such as the tibia can be managed in a primary care office without consulting a sports medicine or orthopedic physician. Fractures in high-risk locations are at increased risk for malunion and thus are often managed by specialists. This patient has a low-risk stress fracture.

Ref: Patel DR: Stress fractures: Diagnosis and management in the primary care setting. Pediatr Clin North Am 2010;57(3):819-827. 2) Behrens SB, Deren ME, Matson A, et al: Stress fractures of the pelvis and legs in athletes: A review. Sports Health 2013;5(2):165–174.

Item 153

ANSWER: C

In males younger than 40, hematospermia is usually benign and self-limited. Examination of the testes and prostate is warranted but findings are usually normal. If the patient is sexually active a screen for STDs is reasonable. Imaging of the genitourinary tract, a serum PSA level, and urology referral are unnecessary in this age group unless the history or physical examination suggests an unusual cause.

Ref: Stefanovic KB, Gregg PC, Soung M: Evaluation and treatment of hematospermia. Am Fam Physician 2009;80(12):1421-1427.

Item 154

ANSWER: A

Tricyclic antidepressants (TCAs) such as amitriptyline have shown benefit in patients with irritable bowel syndrome (IBS), as have SSRIs. Because of the anticholinergic properties of TCAs it is thought that TCAs may be more beneficial than SSRIs in patients with diarrhea-predominant IBS, such as this patient.

Unfortunately, studies have not shown a significant benefit from increasing either insoluble or soluble fiber to the diet of patients with IBS. Although increasing fiber may help improve constipation in patients with constipation-predominant IBS, this does not improve abdominal pain. In some studies adding insoluble fiber resulted in either worsening of symptoms or no change in symptoms.

Clarithromycin was studied in a single randomized, controlled trial and found not to be effective compared with placebo. Loperamide has not been successful for reducing abdominal pain compared with placebo in patients with IBS.

Ref: American College of Gastroenterology Task Force on Irritable Bowel Syndrome, Brandt LJ, Chey WD, et al: An evidence-based position statement on the management of irritable bowel syndrome. Am J Gastroenterol 2009;104(Suppl 1):S1-S35. 2) Saha L: Irritable bowel syndrome: Pathogenesis, diagnosis, treatment, and evidence-based medicine. World J Gastroenterol 2014;20(22):6759-6773.

Item 155

ANSWER: A

This patient presents with classic symptoms of Addison's disease, which is an autoimmune adrenalitis in which the adrenal cortex is destroyed. This results in the loss of mineralocorticoid, glucocorticoid, and adrenal androgen hormone production. Common symptoms of Addison's disease include anorexia, weakness, fatigue, gastrointestinal symptoms, hypotension, salt cravings, postural dizziness, vitiligo, muscle pain, and joint pain. Hyperpigmentation is the most common physical finding and is generally distributed diffusely over the entire body. It can also be seen in the palmar creases, at the vermillion border of the lips, on the buccal mucosa, around the nipples, and around scars.

Low serum cortisol measured at 8 a.m. suggests adrenal insufficiency. Hyponatremia may also be seen, due to cortisol and mineralocorticoid deficiencies, and hyperkalemia may occur as a result of the lack of mineralocorticoids. If cortisol is low, a cosyntropin stimulation test is the first-line test for diagnosing adrenal insufficiency.

People with Addison's disease require lifelong hormone therapy with glucocorticoids and mineralocorticoids. They also require stress-dose glucocorticoids for illnesses and before surgical procedures because they are unable to mount an adequate response to stress. Generally, the treatment will be prednisone or hydrocortisone along with fludrocortisone. Men with Addison's disease do not need testosterone replacement because their testes will produce adequate levels. Women may benefit from testosterone replacement because the adrenal glands are their primary source of testosterone.

Ref: Michels A, Michels N: Addison disease: Early detection and treatment principles. Am Fam Physician 2014;89(7):563-568.

Item 156

ANSWER: B

Recombinant influenza vaccine is formulated without using eggs. Live attenuated influenza vaccine comes only in a trivalent formulation. The other vaccines listed are all prepared using eggs.

Ref: Grohskopf LA, Olsen SJ, Sokolow LZ, et al; Centers for Disease Control and Prevention: Prevention and control of seasonal influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2014–15 influenza season. MMWR Morb Mortal Wkly Rep 2014;63(32):691-697.

Item 157

ANSWER: D

Arthroscopic partial meniscectomy is the most common orthopedic procedure performed in the United States. For patients without osteoarthritis of the knee, studies show meniscectomy for a tear of the meniscus is no more beneficial than conservative therapy in terms of functional status at 6 months. In a high-quality randomized, controlled trial involving patients with a medial meniscus tear but no osteoarthritis, meniscectomy and sham surgery were equally effective (SOR B). The optimal approach in patients with a degenerative tear of the meniscus is a physical therapy and exercise regimen.

Ref: McClester Brown M, Mounsey A: Surgery for persistent knee pain? No so fast. J Fam Pract 2014;63(9):534-536.

Item 158

ANSWER: D

Analysis of 78 randomized clinical trials has shown an increase in all-cause mortality associated with supplementation with vitamin E, vitamin A, and β-carotene. No benefits or reductions in all-cause mortality were demonstrated for vitamin C or selenium (SOR A).

Ref: Bjelakovic G, Nikolova D, Gluud C: Antioxidant supplements to prevent mortality. JAMA 2013;310(11):1178-1179.

Item 159

ANSWER: A

The best initial test for the diagnosis of male hypogonadism is measurement of total testosterone in serum in a morning sample. Low concentrations of testosterone in serum should be confirmed by repeat measurement. If abnormalities in concentrations of sex hormone–binding globulin are suspected, measurement of free or bioavailable testosterone is indicated. Examples of conditions associated with altered sex hormone–binding globulin include liver disease, obesity, and diabetes mellitus.

Ref: Basaria S: Male hypogonadism. Lancet 2014;383(9924):1250-1263.

Item 160

ANSWER: C

When investigating presumed hyper- or hypothyroidism, TSH is the first-line test (SOR A). If the patient is found to have an abnormal TSH level, free T_4 is the next test to order. A free T_3 test can also be helpful, but the free T_4 assay is not affected by changes in iodothyronine-binding proteins, and T_3 is often a peripheral product and can be abnormal due to nonthyroid diseases or medications. Occasionally, free T_4 and T_3 tests are performed as second-line tests, even if the TSH is normal, if the results do not match the clinical picture. Other second- and third-line tests include measurement of thyroid antibodies, such as antithyroid peroxidase and antithyroglobulin. Routine thyroid screening tests are not indicated for asymptomatic adults (SOR A).

Ref: Gaitonde DY, Rowley KD, Sweeney LB: Hypothyroidism: An update. Am Fam Physician 2012;86(3):244-251. 2) Tessier J, Downen M, Engel-Brower J, et al: Pitfalls and pearls for 8 common lab tests. J Fam Pract 2014;63(4):198-205. 3) Final Recommendation Statement: Thyroid Dysfunction: Screening. US Preventive Services Task Force, 2015.

Item 161

ANSWER: A

A 2013 update from the American College of Obstetricians and Gynecologists on hypertension in pregnancy summarizes the evidence regarding prevention of preeclampsia. The only medication with sufficient evidence to support its routine use is aspirin at dosages of 60–80 mg daily. In a high-risk population, defined as women with a history of preeclampsia in two or more pregnancies or a history of preeclampsia with delivery at <34 weeks, the risk of preeclampsia is sufficiently high to justify the use of aspirin, with a number needed to treat of 50 to prevent one case of preeclampsia. Calcium supplementation may help prevent preeclampsia in women with a very low calcium intake, but in the United States and other developed countries routine calcium supplementation has not been found to provide a benefit with regard to preeclampsia. Vitamin E has also been studied and found to be of no benefit. Antihypertensive agents such as labetalol and nifedipine may be used to control blood pressure in pregnant patients but they have not been shown to reduce the risk of preeclampsia.

Ref: American College of Obstetricians and Gynecologists; Task Force on Hypertension in Pregnancy: Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol 2013;122(5):1122-1131.

Item 162

ANSWER: A

Most patients with asymptomatic gallstones can be managed expectantly with no treatment unless symptoms of biliary colic develop (SOR B). Only about 2% of such patients will develop symptoms. Once symptoms start, recurrence of pain, obstruction of the biliary or pancreatic duct, and the potential for attendant complications such as pancreatitis or ascending cholangitis become significantly more likely. In selected patients, oral dissolution therapy, ERCP, or lithotripsy may be effective alternative therapies, but laparoscopic cholecystectomy is clearly the treatment of choice for symptomatic cholelithiasis (SOR A).

Ref: Abraham S, Rivero HG, Erlikh IV, et al: Surgical and nonsurgical management of gallstones. Am Fam Physician 2014;89(10):795-802.

Item 163

ANSWER: B

This patient has primary monosymptomatic enuresis, the most common type of nocturnal enuresis. Primary refers to a child who has never achieved 6 months of continuous dry nights. Monosymptomatic refers to the absence of daytime symptoms such as dysuria or urinary frequency. Children with daytime urinary symptoms have a higher incidence of urinary tract pathology and require further diagnostic evaluation.

Primary monosymptomatic enuresis has a spontaneous annual remission rate of about 15% and does not require treatment unless the patient (not just the parent) is concerned about the issue. Treatment requires participation from both the child and the parents, so ensuring interest from both parties is key. Bed alarms have the best evidence for long-term success in that they train children via classical conditioning to awaken at the onset of urination and get up to finish voiding into the toilet.

Reward systems for achieving dry nights have some evidence of benefit but it is difficult to determine if they are superior to the spontaneous remission rate. Medications such as desmopressin, imipramine, and oxybutynin have a role in addressing nocturnal enuresis if bed alarm use is unsuccessful or if parents and children are not willing to engage in the activities necessary to implement the therapy. Medications may work well while they are used, but enuresis commonly recurs when they are stopped.

Ref: Baird DC, Seehusen DA, Bode DV: Enuresis in children: A case-based approach. Am Fam Physician 2014;90(8):560-568.

Item 164

ANSWER: C

The 2013 ACC/AHA cholesterol guidelines outline four major groups in whom statin therapy is beneficial: (1) individuals with clinical atherosclerotic cardiovascular disease (ASCVD), (2) those with primary elevations of LDL-C >190 mg/dL, (3) patients age 40–75 with diabetes mellitus, an LDL-C level of 70–189 mg/dL, and no clinical ASCVD, (4) patients age 40–75 without clinical ASCVD or diabetes, an LDL-C level of 70–189 mg/dL, and an estimated 10-year ASCVD risk $>7.5\%$. For patients age 40–75 with diabetes, an LDL-C level of 70–189 mg/dL, and no clinical ASCVD, a moderate-intensity statin is recommended.

Ref: Stone NJ, Robinson JG, Lichtenstein AH, et al: 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: A report of the American College of Cardiology/American Heart Association Task Force on practice guidelines. Circulation 2014;129(25 Suppl 2):S1-S45.

Item 165

ANSWER: A

Fentanyl is one of the preferred narcotics in patients with end-stage renal disease. Fentanyl's elimination is 99% hepatic and it has a long history of safe use in patients with renal failure. Morphine, hydromorphone, and hydrocodone can be used in these patients, but these drugs require close monitoring for side effects and indications for dosage reduction because they have active metabolites that accumulate in patients with renal failure. Meperidine, codeine, and propoxyphene are all contraindicated in chronic kidney disease because of the accumulation of toxic metabolites.

Ref: O'Connor NR, Corcoran AM: End-stage renal disease: symptom management and advance care planning. Am Fam Physician 2012;85(7):705-710.

Item 166

ANSWER: E

Aseptic olecranon bursitis is often preceded by minor trauma to the elbow followed by a nontender, boggy mass over the olecranon. Septic olecranon bursitis causes not just swelling, but also erythema, warmth, and pain. Half of affected individuals will have a fever. If septic bursitis is suspected, aspiration with bursal fluid analysis should be done and antibiotic therapy should be initiated. Aspiration is not recommended for the initial treatment of aseptic bursitis, as complications such as infection may occur. Management initially is with ice, compression dressings, and avoidance of activities that aggravate the problem. If conservative therapy is unsuccessful the problem can be managed by aspiration followed by compression dressings for 2 weeks. The bursa may be injected with a corticosteroid, but this could cause skin atrophy or infection. Surgical bursectomy can be offered for refractory cases lasting over 3 months.

Ref: Kane SF, Lynch JH, Taylor JC: Evaluation of elbow pain in adults. Am Fam Physician 2014;89(8):649-657.

Item 167

ANSWER: C

Bicuspid aortic valve is the most likely cause of heart valve disease in this family. It is the most common congenital heart defect in the United States, with a prevalence of approximately 1%–2%. This valve disorder appears to have a genetic basis, with an autosomal dominant pattern of inheritance and incomplete penetrance. The children of a patient with a bicuspid aortic valve have about a 10% chance of having this condition; it is therefore recommended to screen first degree relatives of affected patients with echocardiography. Most patients with a bicuspid aortic valve will eventually have significant aortic valve dysfunction (stenosis or insufficiency) and/or aortopathy such as aortic root dilation.

Rheumatic heart disease can also cause valve disease but its incidence is low in the United States, especially with appropriate treatment for streptococcal pharyngitis. Endocarditis is unlikely in the absence of systemic symptoms. Hypertension and coronary atherosclerosis are unlikely in this patient because of his normal blood pressure. These conditions also are more likely to cause obstructive coronary disease and heart failure than valve disease.

Ref: Losenno KL, Chu MW: Bicuspid aortic valve disease. CMAJ 2013;185(18):1599. 2) Otto CM, Prendergast B: Aortic-valve stenosis—From patients at risk to severe valve obstruction. N Engl J Med 2014;371(8):744-756.

Item 168

ANSWER: E

An ankle-brachial index (ABI) is considered normal between 1.00 and 1.40, borderline from 0.91 to 0.99, and abnormal if ≤0.90. The lower the ABI, the more severe peripheral artery disease is likely to be. Values greater than 1.40 indicate incompressible vessels and are not reliable. Incompressible vessels may be found in patients with long-standing diabetes mellitus, or in older persons. A toe-brachial index measurement may be used in persons with incompressible arteries of the more proximal lower extremity.

Ref: Hauk L: ACCF/AHA update peripheral artery disease management guideline. Am Fam Physician 2012;85(10):1000-1001.

Item 169

ANSWER: E

The U.S. Preventive Services Task Force recommends one-time screening for hepatitis C for individuals born between the years 1945 and 1965 (USPSTF B recommendation). As far as screening for the other problems listed, there is no significant evidence to determine whether this should be done on a widespread basis.

Ref: US Preventive Services Task Force: Screening for Hepatitis C Virus Infection in Adults: Final Recommendation Statement. AHRQ pub no 12-05174-EF-2, 2013.

Item 170

ANSWER: D

While all of the antibiotics listed have been used to treat Lyme disease, the only antibiotic that has been shown to be effective for chemoprophylaxis is doxycycline. A randomized, controlled trial showed that a single 200-mg dose of doxycycline was 87% effective for preventing Lyme disease if given within 72 hours after removal of a deer tick. Nevertheless, a meta-analysis showed that the number needed to treat to prevent one case of erythema migrans was 50, and routine prophylaxis is not recommended. It may be indicated, however, after removal of an engorged nymphal deer tick.

Ref: Shapiro ED: Lyme disease. N Engl J Med 2014;370(18):1724-1731.

Item 171

ANSWER: C

Burns can be classified based on the depth and area of the burn. Only superficial and deep-thickness burns are included in the calculation of the burn area. Minor burns cover less than 10% of the body for patients 10–50 years old and $<5\%$ of the body for patients <10 or >50 years old. Any burn involving the face, hands, or a major joint may be more complicated and should be promptly evaluated.

Superficial burns involve the epidermis and appear as painful patches of erythema and dry skin. Superficial partial-thickness burns involve part of the dermis and all of the epidermis. They cause painful blanching erythema with small blisters and weeping skin. This patient has a superficial burn but in a high-risk area.

Immediate management of a minor burn may include cooling with water but should not involve ice water as this may lead to further injury (SOR C). All wounds should be cleaned with sterile water but not a cleansing agent such as povidone iodine (SOR C). The skin should remain intact if possible and small blisters should not be debrided. Topical corticosteroids should be avoided, as they do not reduce inflammation.

Superficial burns do not require antibiotics or wound dressings. They can be treated with aloe vera, lotion, antibiotic ointment, or honey (SOR B). There is evidence that these treatments promote skin repair and prevent drying. Aloe vera may also decrease pain. There is also evidence that honey heals partial thickness wounds more quickly than conventional dressings.

Ref: Lloyd EC, Rodgers BC, Michener M, Williams MS: Outpatient burns: Prevention and care. Am Fam Physician 2012;85(1):25-32. 2) Jull AB, Cullum N, Dumville JC, et al: Honey as a topical treatment for wounds. Cochrane Database Syst Rev 2015;(3):CD005083.

Item 172

ANSWER: D

The diagnosis of hereditary hemochromatosis requires a random measurement of serum ferritin and calculation of transferrin saturation. The transferrin saturation is calculated by dividing the serum iron level by the total iron binding capacity. If the serum ferritin level is elevated (>200 ng/mL in women) or the transferrin saturation is $\geq 45\%$ the HFE gene should be checked. Measurement of liver transaminases plays a role in determining liver disease but is not helpful in the diagnosis.

Ref: Crownover BK, Covey CJ: Hereditary hemochromatosis. Am Fam Physician 2013;87(3):183-190.

Item 173

ANSWER: E

The classic symptoms of hypoparathyroidism are those of insufficient calcium. Typically these include refractory heart failure, tetany, seizures, altered mental status, and stridor. Refractory heart failure is related to the low calcium interfering with the normal contractility of myocytes. Low vitamin D can cause hypocalcemia but is not caused by it. Patients are not at risk for hyperkalemia if they have hypoparathyroidism. Seizures, not somnolence, and muscle twitching, not flaccidity, are symptoms of low calcium.

Ref: Shoback D: Hypoparathyroidism. N Engl J Med 2008;359(4):391-403. 2) Michels TC, Kelly KM: Parathyroid disorders. Am Fam Physician 2013;88(4):249-257.

Item 174

ANSWER: A

Vagal maneuvers and administration of adenosine are useful in the diagnosis and treatment of narrow-complex supraventricular tachycardias. Adenosine, a very short-acting endogenous nucleotide that blocks atrioventricular nodal conduction, terminates nearly all atrioventricular nodal reentrant tachycardias and atrioventricular reciprocating tachycardias, as well as up to 80% of atrial tachycardias. Although intravenous verapamil and diltiazem, which also block the atrioventricular node, have a potential diagnostic and therapeutic use in narrow-complex tachycardia, they may cause hypotension and thus are not a first choice in the emergency setting. Electrical cardioversion is reserved for patients who do not respond to adenosine. Antiarrhythmic agents are rarely necessary in the early management of supraventricular tachycardias, with the exception of the management of arrhythmias that have caused hemodynamic instability and that have not responded to electrical cardioversion. In these cases, procainamide and ibutilide can be used.

Ref: Link MS: Evaluation and initial treatment of supraventricular tachycardia. N Engl J Med 2012;367(15):1438-1448.

Item 175

ANSWER: A

It is important to be able to tell children and their families that many small umbilical hernias resolve without surgical repair and that the rate of both incarceration prior to surgery and complications from surgery are very low. Surgical repair of pediatric umbilical hernias is indicated if the hernia has not resolved by 3–5 years of age or for incarcerated hernias at any age. The primary care physician may observe younger children who are asymptomatic, limiting the need for surgical referral. Smaller hernias ($<$ 1.0–1.5 cm in diameter) typically resolve more quickly than larger hernias. The surgery is usually done on an outpatient basis, which is often reassuring to parents. Less than 1% of patients experience incarceration. Imaging studies are not routinely required and applying pressure over the defect has no benefit.

Ref: Kaiser GL: Symptoms and Signs in Pediatric Surgery. Springer, 2012. 2) Holcomb GW III, Murphy JP, Ostlie DJ: Ashcraft's Pediatric Surgery, ed 6. Saunders Elsevier, 2014.

Item 176

ANSWER: D

In April 2005 the FDA issued a boxed warning for second-generation antipsychotics, including quetiapine, after a meta-analysis demonstrated a 1.6- to 1.7-fold increase in the risk of death associated with their use in elderly patients with dementia, related in part to sudden cardiac death and also to stroke. In June 2008, after two large cohort studies showed a similar risk with first-generation antipsychotics, boxed warnings were added to this class as well. The other medications listed do not have this association or warning.

Ref: Schneider LS, Dagerman KS, Insel P: Risk of death with atypical antipsychotic drug treatment for dementia: Meta-analysis of randomized placebo-controlled trials. JAMA 2005;294(15):1934-1943. 2) Gill SS, Rochon PA, Herrmann N, et al: Atypical antipsychotic drugs and risk of ischaemic stroke: Population based retrospective cohort study. BMJ 2005;330(7489):445. 3) Schneeweiss S, Setoguchi S, Brookhart A, et al: Risk of death associated with the use of conventional versus atypical antipsychotic drugs among elderly patients. CMAJ 2007;176(5):627-632. 4) Muench J, Hamer AM: Adverse effects of antipsychotic medications. Am Fam Physician 2010;81(5):617-622.

Item 177

ANSWER: C

If recommended prior to surgery, β-blockers should be started several weeks beforehand and carefully titrated. They may be harmful if initiated in the immediate perioperative period. Statins are recommended in the perioperative period for vascular surgery regardless of other cardiac risk factors; a statin would ideally have been initiated previously in this case, but may still be started in the immediate preprocedural period. There is no specific indication in this case for an ACE inhibitor.

Ref: Holt NF: Perioperative cardiac risk reduction. Am Fam Physician 2012;85(3):239-246.

Item 178

ANSWER: A

Allergic contact dermatitis is secondary to a trigger that incites a delayed (type IV) hypersensitivity reaction. The most common sensitizers include plants (poison ivy, poison oak, and poison sumac), metals (nickel found in jewelry or belt buckles), and fragrances. Patch testing data has shown that out of 3700 known contact allergens, nickel caused contact dermatitis in 14.3% of patients, fragrance mix in 14%, neomycin in 11.6%, balsam of Peru in 10.4%, and thimerosal in 10.4%. The rash is limited to the area of exposure and is characterized by an intensely pruritic papular eruption with erythema. Herpes simplex is characterized by a vesicular eruption surrounded by erythema and associated with localized burning and tingling. Tinea corporis presents as a pruritic circular or oval erythematous lesion with superficial scaling and erythema. Multiple oval or circular pruritic salmon-colored scaly lesions preceded by a herald patch are typical of pityriasis rosea (SOR C).

Ref: Usatine RP, Riojas M: Diagnosis and management of contact dermatitis. Am Fam Physician 2010;82(3):249-255.

Item 179

ANSWER: D

The most common serum tumor marker used for pancreatic ductal adenocarcinoma is cancer antigen 19-9, which is expressed in pancreatic and hepatobiliary disease. In symptomatic patients it can help confirm the diagnosis and aid in assessing the prognosis and predicting the likelihood of recurrence after resection.

CA-125 may be a useful marker with ovarian carcinoma, and α-fetoprotein may be followed as a marker of hepatoma. Neither serum amylase nor α-1-antitrypsin is useful as a tumor marker.

Ref: De La Cruz MS, Young AP, Ruffin MT: Diagnosis and management of pancreatic cancer. Am Fam Physician 2014;89(8):626-632.

Item 180

ANSWER: C

Chest pain is a common presenting complaint in children and certainly can result from serious cardiac pathology. However, the majority of chest pain in children is benign, and determining clinically which patients need a cardiac workup is therefore paramount. Patients and families overestimate the prevalence of cardiac causes of chest pain and underestimate the prevalence of more benign causes. The most common cause of chest pain in children is musculoskeletal (50%–60%) followed by psychogenic (10%–30%) and respiratory causes (3%–12%). Cardiac conditions account for 0%–5% of cases of chest pain in children. Red flags that suggest a cardiac etiology include a patient history of palpitations with the chest pain, an abnormal cardiac physical examination (rubs or gallops), exertional chest pain without another more likely etiology such as asthma, and a positive family history. When any of the red flags is present, the patient should be referred to a pediatric cardiologist. This patient has no red flags and the most likely etiology of her chest pain is therefore musculoskeletal.

Ref: Friedman KG, Alexander ME: Chest pain and syncope in children: A practical approach to the diagnosis of cardiac disease. J Pediatr 2013;163(3):896-901.

Item 181

ANSWER: C

The patient has EKG findings suggestive of an acute ST-elevation myocardial infarction. This is demonstrated on the EKG by the presence of ST-segment elevation in contiguous leads I, aVL, and V6. Troponin, a cardiac biomarker released from damaged myocardial cells, is elevated in patients with an acute myocardial infarction. Elevated D-dimer suggests thromboembolism, but normal levels have a high negative predictive value for ruling out pulmonary embolism. Hyperkalemia is associated with peaked T-waves in multiple leads. EKG findings in patients with a pulmonary embolism include sinus tachycardia with an S1Q3T3 pattern (T-wave inversion in III), incomplete right bundle branch block, and right precordial T-wave inversions. Thyroid hormone abnormalities can be associated with nonspecific EKG findings, but tachyarrhythmias (including atrial fibrillation) are more common in hyperthyroidism, whereas bradycardia is more common in hypothyroidism (SOR C).

Ref: Kasper DL, Fauci AS, Hauser SL, et al (eds): Harrison's Principles of Internal Medicine, ed 19. McGraw-Hill, 2015, pp 1455-1466, 1600-1601.

Item 182

ANSWER: D

The U.S. Preventive Services Task Force (USPSTF) recommends screening smokers for lung cancer with low-dose CT. Patients should be age 55–80 and healthy. They should be current smokers or have quit within the past 15 years, and have a 30-pack-year history of smoking. The screening test is low-dose CT of the chest. Abdominal ultrasonography to screen for abdominal aneurysms is recommended for any male age 65–75 who has ever smoked (USPSTF B recommendation). A bone density test screens for osteoporosis and is recommended for women age 65 or older or in younger women at increased risk. The USPSTF recommends against PSA testing (D recommendation) for prostate cancer, as well as screening for carotid artery stenosis.

Ref: Final Recommendation Statement: Osteoporosis: Screening. US Preventive Services Task Force, 2011. 2) Final Recommendation Statement: Prostate Cancer: Screening. US Preventive Services Task Force, 2012. 3) Final Recommendation Statement: Lung Cancer: Screening. US Preventive Services Task Force, 2013. 4) Final Recommendation Statement: Abdominal Aortic Aneurysm: Screening. US Preventive Services Task Force, 2014. 5) Final Recommendation Statement: Carotid Artery Stenosis: Screening. US Preventive Services Task Force, 2014.

Item 183

ANSWER: D

This patient has hypotonic hyponatremia, manifested by low serum osmolality. She is asymptomatic and has no signs of hypovolemia on her laboratory tests or physical examination. Her urine sodium is high and her urine osmolality is low, which indicates the syndrome of inappropriate secretion of antidiuretic hormone (SIADH). This is most likely related to her pneumonia, which is improving. The initial treatment for mild euvolemic hyponatremia is fluid restriction. Intravenous isotonic saline would be indicated for mild hypovolemic hyponatremia. Intravenous hypertonic saline would be indicated for severe hyponatremia with symptoms. Intravenous diuretics would be indicated for hypervolemic hyponatremia, such as in heart failure, along with fluid and sodium restriction.

Ref: Braun MM, Barstow CH, Pyzocha NJ: Diagnosis and management of sodium disorders: Hyponatremia and hypernatremia. Am Fam Physician 2015;91(5):299-307.

Item 184

ANSWER: D

Hyperplastic polyps < 10 mm in size in the rectum and sigmoid colon carry a low risk for developing into colon cancer. If they are the only finding, colonoscopy may be repeated in 10 years.

Ref: Short MW, Layton MC, Teer BN, Domagalski JE: Colorectal cancer screening and surveillance. Am Fam Physician 2015;91(2):93-100.

Item 185

ANSWER: E

Worldwide, hepatitis B is a common cause of liver failure, cirrhosis, and hepatocellular carcinoma. The disease characteristically is asymptomatic before such complications develop. Although routine infant vaccination against hepatitis B has greatly decreased the incidence of this infection in the United States, it remains a significant cause of morbidity and mortality both in the United States and globally. Identifying persons infected with hepatitis B allows vaccination of their household contacts and sexual partners, thereby preventing further transmission. It also allows for medical treatment of infected individuals, including antiviral therapy and monitoring for the development of cirrhosis or hepatocellular carcinoma.

The CDC recommends screening for hepatitis B in patients on hemodialysis, household contacts of individuals with chronic hepatitis B, patients on immunosuppressive therapy, and all pregnant women. Other individuals who should be screened include anyone exposed to bodily fluids of infected individuals, such as sexual partners or infants of infected mothers. Behavioral risks such as intravenous drug use are also an indication for screening. Patients from areas where HBsAg prevalence is $> 2\%$ should also be screened.

Ref: Weinbaum CM, Williams I, Mast EE, et al; Centers for Disease Control and Prevention (CDC): Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. MMWR Recomm Rep 2008;57(RR-8):1-20. 2) Peters MG, Weinbaum C, Tan L, et al: Recommendations for prevention, screening, and diagnosis of HBV and HCV infections. J Fam Pract 2010;59(4 Suppl):S29-S35.

Item 186

ANSWER: C

Neurologic symptoms may develop with low-normal vitamin B_{12} levels in serum. In true vitamin B_{12} deficiency, methylmalonic acid and homocysteine levels are typically quite elevated, and these return to normal with treatment. Gastrin levels may be abnormal in pernicious anemia, but are not diagnostic alone. High ferritin levels are seen with increased iron stores in the liver, and ferritin levels are used to screen for hemochromatosis.

Ref: Stabler SP: Vitamin B_{12} deficiency. N Engl J Med 2013;368(2):149-160.

Item 187

ANSWER: D

Neglect is the most common form of child abuse and is the most common type of abuse in children who die as a result of abuse. In 2011, 79% of abused children suffered from neglect, 18% from physical abuse, and 9% from sexual abuse. Among abused children who died, 71% suffered from neglect, 48% from physical abuse, and less than 1% from sexual abuse. Neglect is defined as the failure of caregivers to provide needed, age-appropriate care, even though the caregiver was financially able to do so or was offered financial or other assistance to provide appropriate care.

Ref: Administration on Children, Youth and Families, Children's Bureau. Child Maltreatment 2011. US Dept of Health and Human Services, 2012. 2) Fan T, Pham A: Primary care interventions to prevent child maltreatment. Am Fam Physician 2014;90(4):255-256.

Item 188

ANSWER: D

Because hyperkalemia can have deleterious effects on the myocardium, an EKG is the first diagnostic test in the workup of a patient with hyperkalemia. Although not all patients with hyperkalemia will have an abnormal EKG, those who do need to be given intravenous calcium immediately to prevent arrhythmias and cardiac arrest. A urinalysis, blood pH, and CBC are part of the workup to determine the etiology of the hyperkalemia, but an EKG is the top priority. There is not a defined threshold for treatment of hyperkalemia with intravenous calcium in asymptomatic patients without EKG changes. Likewise, renal ultrasonography may be indicated for other reasons but is not part of the initial workup for hyperkalemia.

Ref: Medford-Davis L, Rafique Z: Derangements of potassium. Emerg Med Clin North Am 2014;32(2):329-347.

Item 189

ANSWER: E

Metformin is an inexpensive first-line oral agent for type 2 diabetes mellitus. Its mechanism of action is to increase the sensitivity of the liver and peripheral tissues to insulin. This assists the patient with weight loss efforts and, unlike insulin secretagogues, has been proven to reduce mortality with long-term use. When metformin is used as monotherapy it is not associated with episodes of hypoglycemia. For many years there has been a concern that metformin can increase the risk for lactic acidosis. This risk has been assumed to be greater in conditions that can lead to tissue hypoperfusion, such as heart failure or hypovolemia, or with renal impairment. The FDA has historically recommended against the use of metformin for any patient with even mild renal impairment (creatinine >1.4 mg/dL for women and >1.5 mg/dL for men). However, a recent meta-analysis did not find supportive evidence for such restrictions. Newer evidence suggests that the use of metformin is safe even with mild to moderate renal impairment (eGFR >30 mL/min) (SOR A).

Ref: Salpeter SR, Greyber E, Pasternak GA, Salpeter EE: Risk of fatal and nonfatal lactic acidosis with metformin use in type 2 diabetes mellitus. Cochrane Database Syst Rev 2010;(4):CD002967. 2) Inzucchi SE, Lipska KJ, Mayo H, et al: Metformin in patients with type 2 diabetes and kidney disease: A systematic review. JAMA 2014;312(24):2668-2675. 3) AHFS Drug Information 2015. American Society of Health-System Pharmacists, 2015.

Item 190

ANSWER: D

Approximately 1.7 million breast, colon, prostate, and other carcinomas are diagnosed in the United States each year. More than 2.5 million basal cell carcinomas will be diagnosed. Most of these will be treated, including more than 100,000 in the patient's last year of life. These are very slow growing tumors that rarely metastasize, and asymptomatic basal cell carcinomas rarely need treatment in frail older patients.

Ref: Linos E, Schroeder SA, Chren MM: Potential overdiagnosis of basal cell carcinoma in older patients with limited life expectancy. JAMA 2014;312(10):997-998.

Item 191

ANSWER: A

Behavioral therapy should be the primary treatment for attention-deficit/hyperactivity disorder (ADHD) in children younger than 6 years, and it may be helpful at older ages (SOR B). Treatment of ADHD in children 6 years and older should start with medication (SOR B).

Ref: Felt BT, Biermann B, Christner JG, et al: Diagnosis and management of ADHD in children. Am Fam Physician 2014;90(7):456-464.

Item 192

ANSWER: D

Hoarding disorder is included in the DSM-5. It is more common than previously realized, affecting between 2% and 6% of adults. It is characterized by excessive, often dangerous, clutter and disorganized living spaces. The items collected or saved often are worthless, such as old newspapers and paperwork, but may also be valuable items. Opposed to this is normal collecting, which is organized and pleasurable, and does not lead to dangerous or chaotic living spaces. Both could involve collecting unusual or seemingly bizarre items. However, with hoarders, disposing of the items causes extreme anxiety and emotional distress.

Ref: Mataix-Cols D: Hoarding disorder. N Engl J Med 2014;370(21):2023-2030.

Item 193

ANSWER: E

A nontreponemal test, such as the rapid plasma reagin (RPR) test or Venereal Disease Research Laboratory (VDRL) test, is the initial step for evaluating a patient with suspected syphilis. These tests become positive within 3 weeks of the appearance of the primary chancre, so they may be negative in patients with an early infection. Darkfield microscopy of material obtained from a swab of the lesion is often useful in this situation, but it requires special equipment and experienced technicians. If there is a strong suspicion of syphilis, a repeat nontreponemal test in 2 weeks is indicated. Patients with a positive nontreponemal test should be tested with a specific treponemal test for confirmation. These tests may lack reactivity in early primary syphilis, however, and are not indicated for use in the initial evaluation. Spinal fluid analysis is used only for the evaluation of tertiary syphilis.

Ref: Mattei PL, Beachkofsky TM, Gilson RT, Wisco OJ: Syphilis: A reemerging infection. Am Fam Physician 2012;86(5):433-440.

Item 194

ANSWER: C

Trials have evaluated various antidepressant medications as aids in tobacco cessation. Both bupropion and nortriptyline have been found to increase smoking cessation success rates. Because this patient does not want to try bupropion, nortriptyline would be a reasonable option. Studies have shown similar efficacy for these two medications, although there is a lack of evidence for increased efficacy when these medications are added to nicotine replacement therapy. Studies have not shown a benefit for promoting tobacco cessation with SSRIs such as fluoxetine, monoamine oxidase inhibitors such as selegiline, opioid antagonists such as naltrexone, or St. John's wort.

Ref: Hughes JR, Stead LF, Hartmann-Boyce J, et al: Antidepressants for smoking cessation. Cochrane Database Syst Rev 2014;(1):CD000031. 2) Hartmann-Boyce J, Stead LF, Cahill K, Lancaster T: Efficacy of interventions to combat tobacco addiction: Cochrane update of 2013 reviews. Addiction 2014;109(9):1414-1425.

Item 195

ANSWER: E

A screening test's specificity is the proportion of persons without the condition who test negative for that condition. In other words, it is a measure of the test's ability to properly identify those who do not have the disease. Conversely, the sensitivity of a screening test is the proportion of those with the condition who test positive. The other options listed describe false-negatives, false-positives, and prevalence.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, p 37.

Item 196

ANSWER: B

Recommendations for the treatment of hospitalized infants with bronchiolitis include nasal suctioning via bulb or neosucker to clear the upper airway. Deep suction (beyond the nasopharynx) is not recommended. Oxygen is recommended for infants with a persistent oxygen saturation $<90\%$. Bronchodilators should not be used routinely in the management of bronchiolitis, and corticosteroids, antibiotics, nasal decongestants, and chest physiotherapy are not recommended. A single trial of inhaled epinephrine or albuterol for respiratory distress may be considered, but only if there is a history of asthma, atopy, or allergy.

Ref: Mittal V, Darnell C, Walsh B, et al: Inpatient bronchiolitis guideline implementation and resource utilization. Pediatrics 2014;133(3):e730-e737.

Item 197

ANSWER: D

The use of bisphosphonates is associated with a small increase in the risk of atypical femoral shaft fractures. The risk increases with the duration of use (SOR B). These drugs are also associated with an increased risk of osteonecrosis of the jaw, esophagitis, and esophageal ulceration, as well as hypocalcemia. In fact, bisphosphonates are used as a treatment for hypercalcemia. They do not affect phosphorus or vitamin D levels.

Ref: Scott MA, Meadowcraft L, Skolnik D: Risks of bisphosphonate use. Am Fam Physician 2013;88(10):697, 702.

Item 198

ANSWER: A

Carbon monoxide (CO) exposure most commonly results from fuel combustion in heaters, stoves, or automobiles, so it is most often seen during cold periods when people are in closed quarters. Symptoms include headache, nausea, vomiting, and weakness, and patients have a flushed complexion, so symptoms are commonly attributed to viral flu-like illnesses. CO poisoning results in the formation of carboxyhemoglobin, which does not carry oxygen. All oxygen-carrying sites are occupied by CO, which has such a high affinity for hemoglobin that oxygen cannot displace it. If a patient has a carboxyhemoglobin level of 25%, and their hemoglobin level is 12 mg/dL, their effective hemoglobin level is only 9 mg/dL since 25% of their hemoglobin is not carrying oxygen. If the carboxyhemoglobin level is 25%, then the maximum oxygen saturation that can be attained is 75%. However, a pulse oximeter will show an oxygen saturation of 100% because the color of carboxyhemoglobin is bright red, which is what the pulse oximeter is detecting. Thus, pulse oximetry is not reliable in patients with CO poisoning.

Similarly, arterial blood gas measurements are based on oxygen gas tension (pO_2) and not oxygen content or true oxygen saturation. The only arterial blood gas abnormality in CO poisoning may be metabolic acidosis, which is a consequence of inadequate oxygen delivery to the peripheral tissues. This causes an anaerobic metabolism and lactic acid production, but is not seen early in CO poisoning. Serious cases of pneumonia, ARDS, or methemoglobinemia would produce abnormalities on pulse oximetry or arterial blood gas measurements. To detect CO poisoning it would be necessary to order either a CO level or a co-oximetry test.

Ref: Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine: A Comprehensive Study Guide, ed 7. McGraw-Hill, 2011, pp 1410-1413.

Item 199

ANSWER: A

The Centers for Disease Control and Prevention (CDC) provides specific recommendations for backup contraception after IUD insertion. According to the CDC guidelines, this patient does not need to use backup contraception if her IUD is inserted today because it was inserted within 7 days after menstrual bleeding started. If the levonorgestrel IUD is inserted more than 7 days after menstrual bleeding starts, the patient needs to abstain from sexual intercourse or use additional contraceptive protection for the next 7 days.

Ref: Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC): US selected practice recommendations for contraceptive use, 2013: Adapted from the World Health Organization selected practice recommendations for contraceptive use, 2nd edition. MMWR Recomm Rep 2013;62(RR-05):1-60.

Item 200

ANSWER: A

SGLT2 inhibitors inhibit SGLT2 in the proximal nephron. This blocks glucose reabsorption by the kidney, increasing glucosuria. The advantages of this medication include no hypoglycemia, decreased weight, decreased blood pressure, and effectiveness at all stages of type 2 diabetes mellitus. Disadvantages are that it increases the risk of genitourinary infections, polyuria, and volume depletion and increases LDL-cholesterol and creatinine levels. GLP-1 receptor agonists work by activating the GLP-1 receptors, causing an increase in insulin secretion, a decrease in glucagon secretion, slowing of gastric emptying, and increasing satiety. DPP-4 inhibitors inhibit DPP-4 activity, which increases postprandial active incretin concentration. This increases insulin secretion and decreases glucagon secretion. Meglitinides act by closing the ATP-sensitive K+ channels on the B-cell plasma membranes, which increases insulin secretion. α-Glucosidase inhibitors inhibit intestinal α-glucosidase, which slows intestinal carbohydrate digestion and absorption.

Ref: American Diabetes Association: Standards of medical care in diabetes—2015: 7. Approaches to glycemic treatment. Diabetes Care 2015;38(Suppl):S41-S48.

Item 201

ANSWER: C

Eccentric exercise should be the first-line treatment for chronic midsubstance Achilles tendinopathy. Corticosteroid injections, bracing, and NSAIDs are not effective for providing long-term relief for chronic degenerative tendon injuries. Therapeutic ultrasonography is a reasonable second-line alternative.

Ref: Childress MA, Beutler A: Management of chronic tendon injuries. Am Fam Physician 2013;87(7):486-490.

Item 202

ANSWER: C

Vancomycin, 125 mg orally 4 times daily for 10–14 days, is recommended for the first severe episode of Clostridium difficile colitis (SOR B). If the first episode is mild to moderate, oral metronidazole, 500 mg 3 times daily for 10–14 days, would be preferred. Intravenous vancomycin is not effective in the treatment of colitis. Rifaximin is not well studied and is not recommended in any current guidelines.

Ref: Cohen SH, Gerding DN, Johnson S, et al: Clinical practice guidelines for Clostridium difficile infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). Infect Control Hosp Epidemiol 2010;31(5):431-455.

Item 203

ANSWER: C

Structural non-atherosclerotic heart disease is the predominant cause of sudden death in young athletes. Hypertrophic cardiomyopathy, an autosomal dominant condition with variable expression, accounts for more than one-third of these cases. Coronary artery abnormalities are second in frequency as a cause of sudden cardiac death in this population, with idiopathic ventricular hypertrophy third.

Ref: Chandra N, Bastiaenen R, Papadakis M, Sharma S: Sudden cardiac death in young athletes: Practical challenges and diagnostic dilemmas. J Am Coll Cardiol 2013;61(10):1027-1040.

Item 204

ANSWER: D

Most thoracic aortic aneurysms are asymptomatic, but symptoms can be produced by distortion, compression, or erosion of adjacent structures by the aneurysm. Resulting symptoms include cough, hemoptysis, chest pain, hoarseness, and dysphagia. A chest radiograph showing widening of the mediastinum and prominence of the aortic arch and thoracic aorta suggests a thoracic aortic aneurysm. Contrast-enhanced CT, MRI, and aortography are sensitive and specific tests for assessment of thoracic aneurysms and involvement of branch vessels. Echocardiography (especially transesophageal) helps in further evaluating the proximal ascending and descending thoracic aorta.

A pulmonary cavitary lesion, seen in pulmonary tuberculosis, is typically located in the upper lung lobe and is often associated with mediastinal lymphadenopathy. The presence of a retrocardiac gas-filled structure suggests the presence of a hiatal hernia. The chest radiograph may show a "water bottle" configuration of the cardiac silhouette in a patient with pericardial effusion (SOR C).

Ref: Kasper DL, Fauci AS, Hauser SL, et al (eds): Harrison's Principles of Internal Medicine, ed 19. McGraw-Hill, 2015, pp 1638-1639.

Item 205

ANSWER: E

The patient has typical signs and symptoms of testicular torsion despite inconclusive ultrasonography. Surgical exploration is necessary because the testicle can be salvaged if the torsion is repaired within 6 hours of symptom development (SOR C).

Ref: Crawford P, Crop JA: Evaluation of scrotal masses. Am Fam Physician 2014;89(9):723-727.

Item 206

ANSWER: E

Patients who are diagnosed with celiac disease are at increased risk of osteoporosis due to bone loss from decreased calcium and vitamin D absorption. These patients are at higher risk for fractures. Patients with celiac disease are not at increased risk for inflammatory bowel disease, diverticulitis, or colon cancer.

Ref: Leffler D: Celiac disease diagnosis and management: A 46-year-old woman with anemia. JAMA 2011;306(14):1582-1592. 2) Pelkowski TD, Viera AJ: Celiac disease: Diagnosis and management. Am Fam Physician 2014;89(2):99-105.

Item 207

ANSWER: A

Acute stress disorder (ASD) lies on a spectrum of trauma-related disorders between adjustment disorder and posttraumatic stress disorder (PTSD). ASD is differentiated from PTSD primarily by duration, with PTSD requiring the presence of similar symptoms (intrusion, negative mood, dissociation, avoidance, and arousal) for longer than 1 month. Conversely, adjustment disorder is a less severe condition than ASD that involves either a less traumatic or threatening inciting event and/or less severe symptoms that do not meet DSM-5 criteria for acute stress disorder.

Ref: Kavan MG, Elsasser GN, Barone EJ: The physician's role in managing acute stress disorder. Am Fam Physician 2012;86(7):643-649. 2) American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, ed 5. American Psychiatric Association, 2013, pp 265-290.

Item 208

ANSWER: A

Enteral nutrition is preferred over parenteral nutrition for patients with severe pancreatitis who have been on prolonged bowel rest, and it is associated with lower complication rates and shorter hospitalizations (SOR A). Prophylactic antibiotics should only be used when there is significant necrosis (SOR C). Similarly, surgical debridement is indicated only if there is infected necrosis or persistent fluid collections (SOR C).

Ref: Quinlan JD: Acute pancreatitis. Am Fam Physician 2014;90(9):632-639.

Item 209

ANSWER: B

Endometriosis is caused by menstrual tissue in the pelvic peritoneal cavity. Infertility, dysmenorrhea, and dyspareunia with postcoital bleeding are common. Although laparoscopy with histology is the definitive test, transvaginal ultrasonography is the noninvasive test of choice. CA-125 will often be elevated but is nonspecific. CT and MRI also have low specificity, and colonoscopy is of no value in the evaluation of endometriosis.

Ref: Schrager S, Falleroni J, Edgoose J: Evaluation and treatment of endometriosis. Am Fam Physician 2013;87(2):107-113.

Item 210

ANSWER: B

Chagas disease is caused by Trypanosoma cruzi, and is estimated to infect some 300,000 persons in the United States. Potential consequences include cardiomyopathy, heart failure, and fatal cardiac arrhythmias. The CDC has designated Chagas disease as a neglected parasitic infection, based on the number of people estimated to be infected in the United States, the potential severity of the illness, and the ability to prevent and treat this disease. This infection is considered neglected because relatively little attention has been devoted to its surveillance, prevention, and/or treatment. It is most common in those who live in rural, impoverished areas in Mexico or central America, where the vector of the disease, the kissing bug, is found.

Trichomoniasis can lead to infertility and poor birth outcomes. Toxocariasis and toxoplasmosis cause developmental defects in children. Cysticercosis can lead to epilepsy in young adults. Some of these sequelae develop years after an initial mild infection.

Ref: Woodhall D, Jones JL, Cantey PT, et al: Neglected parasitic infections: What every family physician needs to know. Am Fam Physician 2014;89(10):803-811.

Item 211

ANSWER: A

The Ottawa Ankle Rules are widely accepted guidelines for appropriate evaluation of ankle and midfoot injuries occurring in adults age 19 or older presenting for the first time in a clinical setting. The guidelines utilize the historical and physical findings to determine which radiographic studies, if any, are indicated. Patients who were able to bear weight immediately following their injury and who can take 4 steps independently in a clinical setting require radiographic study only when the following criteria are met: pain is present in the malleolar zone and bony tenderness of the posterior edge or tip of either malleolus is elicited (ankle radiograph), or pain is present in the midfoot zone and bony tenderness of either the base of the fifth metatarsal or the navicular region is present.

Ref: Tiemstra JD: Update on acute ankle sprains. Am Fam Physician 2012;85(12):1170-1176.

Item 212

ANSWER: C

A "D" recommendation means the U.S. Preventive Services Task Force (USPSTF) recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. An "I" recommendation means the USPSTF concludes that the evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined. A "C" recommendation means the USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small. A "B" recommendation means the USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. An "A" recommendation means the USPSTF recommends the service and there is high certainty that the net benefit is substantial. The highest levels of evidence and most recent evidence available are used by the USPSTF in making all of its recommendations.

Ref: Grade definitions. US Preventive Services Task Force, 2014.

Item 213

ANSWER: C

According to the DSM-5, the level of severity of anorexia nervosa is based on the patient's body mass index (BMI). Mild is a BMI >17.0 kg/m^2, moderate is a BMI of 16.0–16.99 kg/m^2, severe is a BMI of 15.0–15.9 kg/m^2, and extreme is a BMI <15.0 kg/m^2. Recurrent episodes of binge eating or purging behavior help differentiate restricting type from binge-eating/purging type, but do not indicate severity. Orthostatic changes in pulse or blood pressure and refusal to eat are criteria for inpatient hospitalization, but are not part of the classification of severity according to the DSM-5. Amenorrhea can be a clinical sign of anorexia nervosa but is not part of the classification of severity.

Ref: Harrington BC, Jimerson M, Haxton C, Jimerson DC: Initial evaluation, diagnosis, and treatment of anorexia nervosa and bulimia nervosa. Am Fam Physician 2015;91(1):46-52.

Item 214

ANSWER: C

The radiograph shown depicts a right-sided spontaneous pneumothorax. Primary spontaneous pneumothorax, which results from the rupture of subpleural apical blebs, typically affects young men who are smokers with no underlying history of lung disease. The recommended treatment is needle aspiration of air from the pleural space (SOR B). In a reliable patient with a small (< 15% of a hemithorax), stable spontaneous primary pneumothorax, observation alone may be appropriate. There is no role for intravenous heparin or corticosteroids in the management of pneumothorax. The Valsalva maneuver could potentially expand an underlying tension pneumothorax.

Ref: Kasper DL, Fauci AS, Hauser SL, et al (eds): Harrison's Principles of Internal Medicine, ed 19. McGraw-Hill, 2015, p 1719.

Item 215

ANSWER: B

Risk factors for progression from latent to active tuberculosis include lung cancer, diabetes mellitus, alcoholism, recent contact with a person who has an active tuberculosis infection, any condition treated with immunosuppressive therapy, and lung parenchymal diseases such as COPD, silicosis, or lung cancer. The medically underserved and those in low-income groups are also more at risk of progression, as well as children under age 5 and individuals weighing less than 90% of their ideal minimum body weight.

Ref: Hartman-Adams H, Clark K, Juckett G: Update on latent tuberculosis infection. Am Fam Physician 2014;89(11):889-896.

Item 216

ANSWER: C

Influenza vaccine is indicated for all pregnant women, and there are no known deleterious effects on the course of pregnancy or the fetus. Women are advised to avoid pregnancy for 28 days after receiving MMR or varicella vaccines. HPV vaccine is not recommended during pregnancy.

Ref: Guidelines for vaccinating pregnant women. Centers for Disease Control and Prevention, 2013.

Item 217

ANSWER: C

Nearly 75% of pregnant women are affected by nausea and vomiting of pregnancy. Though dietary modifications are often recommended, there is little evidence to support their use. Vitamin B_6 is recommended as first-line therapy. It is safe to use in the first trimester and is associated with less drowsiness compared with other medications.

Scopolamine is effective for nausea and vomiting of pregnancy but should be avoided in the first trimester due to the possibility of causing trunk and limb deformities. Likewise, methylprednisolone is also effective but should be avoided in the first trimester as it is associated with an increased risk of cleft palate if used before 10 weeks of gestation. Auricular acupressure has been found to be ineffective.

Ref: Puangsricharern A, Mahasukhon S: Effectiveness of auricular acupressure in the treatment of nausea and vomiting in early pregnancy. J Med Assoc Thai 2008;91(11):1633-1638. 2) Herrell HE: Nausea and vomiting of pregnancy. Am Fam Physician 2014;89(12):965-970.

Item 218

ANSWER: E

According to the American Heart Association's 2007 guidelines, prophylaxis to prevent bacterial endocarditis associated with dental, gastrointestinal, or genitourinary procedures is now indicated only for high-risk patients with prosthetic valves, a previous history of endocarditis, unrepaired cyanotic congenital heart disease (CHD), or CHD repaired with prosthetic material, and for cardiac transplant recipients who develop valvular disease.

Based on a risk-benefit analysis in light of available evidence for and against antibiotic prophylaxis, these recommendations specifically exclude mitral valve prolapse and acquired valvular disease, even if they are associated with mitral regurgitation. The American Dental Association has endorsed this guideline.

Ref: Wilson W, Taubert KA, Gewitz M, et al: Prevention of infective endocarditis: Guidelines from the American Heart Association. Circulation 2007;116(15):1736-1754.

Item 219

ANSWER: E

Treatment of hypertriglyceridemia depends on its severity. Contributing factors include a sedentary lifestyle, being overweight, excessive alcohol intake, type 2 diabetes mellitus, and genetic disorders. Triglyceride levels of 150–199 mg/dL are considered mild hypertriglyceridemia, levels of 200–999 mg/dL are moderate, 1000–1999 mg/dL are severe, and levels $>$2000 mg/dL are considered very severe. Patients with hypertriglyceridemia in the mild to moderate range may be at risk for cardiovascular disease, but those who have severe or very severe hypertriglyceridemia have a significant risk of pancreatitis.

In addition to having the patient exercise, reduce intake of fat and carbohydrates, and lose weight, she should also be counseled to avoid alcohol. For patients at risk for pancreatitis, fibrates are recommended as the initial treatment for pancreatitis. It should be noted that statins may have a modest triglyceride-lowering effect and may be helpful in decreasing cardiovascular risk in those who have moderately elevated triglycerides. However, they should not be used alone in patients who have severe hypertriglyceridemia. Studies have also shown that while omega-3 fatty acids decrease triglycerides and very low density lipoprotein cholesterol levels, they may increase LDL-cholesterol levels. Treatment with omega-3 fatty acids does not decrease total mortality or cardiovascular events, and therefore is not recommended.

Niacin does seem to have the advantage of raising HDL cholesterol and lowering LDL cholesterol, but it has never been proven in clinical trials to have benefit with regard to the primary outcome of cardiovascular disease, and some trials have shown significant increases in adverse events.

Ref: Stone NJ, Robinson JG, Lichtenstein AH, et al; American College of Cardiology/American Heart Association Task Force on Practice Guidelines: 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014;63(25 Pt B):2889-2934. 2) Armstrong C: Endocrine Society releases guidelines on diagnosis and management of hypertriglyceridemia. Am Fam Physician 2013;88(2):142-144. 2) Ebell MH: Niacin does not improve clinical outcomes in patients with vascular disease. Am Fam Physician 2014;90(9):660-661. 3) Narla R, Peck SB, Qiu KM: Fish oil for treatment of dyslipidemia. Am Fam Physician 2014;89(4):288, 290.

Item 220

ANSWER: D

Approximately 0.3% of patients taking methimazole develop agranulocytosis, usually within the first 60 days of starting therapy. Other rare complications of methimazole include serum sickness, cholestatic jaundice, alopecia, nephrotic syndrome, hypoglycemia, and loss of taste. It is associated with an increased risk of fetal anomalies, so propylthiouracil (PTU) is preferred in pregnancy. The other medications listed are not known to cause the combination of agranulocytosis and cholestatic jaundice that this patient has.

Ref: Papadakis MA, McPhee SJ (eds): Current Medical Diagnosis & Treatment. McGraw-Hill, 2014, p 1074.

Item 221

ANSWER: B

Although there is no specific recommendation about when to initiate pharmacotherapy for the treatment of gestational diabetes mellitus (GDM), many women do require specific treatment beyond diet and exercise. Insulin has traditionally been used but oral medications are becoming increasingly common despite the lack of long-term safety data. Many outcomes for both the mother and infant are improved with pharmacologic management of GDM. These include a decreased risk for operative delivery, large-for-gestational-age infants, shoulder dystocia, and maternal preeclampsia. Although a significant percentage of women with GDM subsequently develop type 2 diabetes mellitus after delivery, pharmacologic treatment of GDM has not been shown to decrease that risk. In addition, neither perinatal death nor the likelihood of small-for-gestational-age infants is significantly affected. The risk of neonatal hypoglycemia has also not consistently been shown to be affected by treatment.

Ref: Horvath K, Koch K, Jeitler K, et al: Effects of treatment in women with gestational diabetes mellitus: Systematic review and meta-analysis. BMJ 2010;340:c1395. 2) Committee on Practice Bulletins—Obstetrics: Practice bulletin no. 137: Gestational diabetes mellitus. Obstet Gynecol 2013;122(2 Pt 1):406-416. 3) Balsells M, Garcia-Patterson A, Solà I, et al: Glibenclamide, metformin, and insulin for the treatment of gestational diabetes: A systematic review and meta-analysis. BMJ 2015;350:h102.

Item 222

ANSWER: B

Motor side effects of the antipsychotic drugs can be separated into five general categories: dystonias, parkinsonism, akathisia, withdrawal dyskinesias, and tardive dyskinesia. Akathisia is a syndrome marked by motor restlessness. Affected patients commonly complain of being inexplicably anxious, of being unable to sit still or concentrate, and of feeling comfortable only when moving. Hysteria is no longer considered a useful term.

Ref: Hales RE, Yudofsky SC, Roberts LW (eds): Textbook of Psychiatry, ed 6. American Psychiatric Publishing, 2014, pp 944-945. 2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, pp 2467-2468. 3) Muench J, Hamer AM: Adverse effects of antipsychotic medications. Am Fam Physician 2010;81(5):617-622.

Item 223

ANSWER: C

All of the diagnoses listed are intertriginous rashes but only erythrasma fluoresces with Wood's light. Erythrasma is a superficial gram-positive bacterial infection caused by Corynebacterium minutissimum. The fluorescence is caused by porphyrins. Erythrasma is most often seen between the toe web spaces, followed by the groin and axillae. There are multiple treatments, including topical and oral erythromycins and clindamycins (level of evidence 3, strength of evidence 1).

Ref: Vary JC, O'Connor KM: Common dermatologic conditions. Med Clin North Am 2014;98(3):445-485.

Item 224

ANSWER: A

All of the drugs listed are appropriate for uterine atony and postpartum hemorrhage. Carboprost should not be used in this patient, however, as it is contraindicated in patients with asthma. Methylergonovine is contraindicated in hypertensive patients but may be used in patients with asthma.

Ref: Alexander JM, Wortman AC: Intrapartum hemorrhage. Obstet Gynecol Clin North Am 2013;40(1):15-26.

Item 225

ANSWER: A

This case is typical for acute parotitis, which is commonly caused by dehydration and can be diagnosed from the history and examination. Empiric treatment is directed toward gram-positive and anaerobic organisms, with the most common pathogen being Staphylococcus. These are often penicillin resistant so a β-lactamase inhibitor is the agent of choice. Treatment should be followed up with cultures. Administration of sialagogues such as lemon drops may be helpful, as well as parotid gland massage.

CT or MRI may help confirm the diagnosis but imaging is usually not necessary. The history and clinical examination are most important for making the diagnosis. Incision and drainage would be appropriate only for an abscess, and surgical removal of the parotid gland is not indicated.

Ref: Mandel L: Salivary gland disorders. Med Clin North Am 2014;98(6):1407-1449. 2) Wilson KF, Meier JD, Ward PD: Salivary gland disorders. Am Fam Physician 2014;89(11):882-888.

Item 226

ANSWER: A

Any child younger than 29 days old with a fever and any child who appears toxic, regardless of age, should undergo a complete sepsis workup and be admitted to the hospital for observation until culture results are known or the source of the fever is found and treated (SOR C).

Observation only, with close follow-up, is recommended for nontoxic infants 3–36 months of age with a temperature < 39.0°C (102.2°F) (SOR C). Children 29–90 days old who appear to be nontoxic and have negative screening laboratory studies, including a CBC and urinalysis, can be sent home with precautions and with follow-up in 24 hours (SOR B). Testing for neonatal herpes simplex virus infection should be considered in patients with risk factors, including maternal infection at the time of delivery, use of fetal scalp electrodes, vaginal delivery, cerebrospinal fluid pleocytosis, or herpetic lesions. Testing also should be considered when a child does not respond to antibiotics (SOR C).

Ref: Hamilton JL, John SP: Evaluation of fever in infants and young children. Am Fam Physician 2013;87(4):254-260.

Item 227

ANSWER: C

Family physicians see many patients with aortic stenosis (AS) and it is important to know when and if further workup is indicated for asymptomatic patients. Although aortic stenosis can result in adverse cardiac events, most of these events occur in patients who are symptomatic. Thus, the American Heart Association and the American College of Cardiology recommend that asymptomatic patients with mild aortic stenosis undergo repeat echocardiography every 3–5 years. Further workup or treatment is not indicated for patients who have mild AS and are asymptomatic. Exercise treadmill testing may be indicated in patients with severe AS based on echocardiography even if they are asymptomatic.

Use of statin drugs has not been shown to slow or stop progression of AS. Right and left heart catheterization can be used in an attempt to resolve discrepancies between symptoms and echocardiographic findings. Because this patient is asymptomatic and her echocardiogram shows only mild AS, left and/or right heart catheterization is not indicated. An ACE inhibitor would be indicated in patients who have a reduced ejection fraction.

Ref: Bonow RO, Carabello BA, Chatterjee K, et al: 2008 focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 1998 Guidelines for the Management of Patients With Valvular Heart Disease). Endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. J Am Coll Cardiol 2008;52(13):e1-e142.

Item 228

ANSWER: C

This patient has postoperative delirium, which is associated with an increased mortality rate. Reorientation and pain management are important management strategies. Benzodiazepines, antipsychotics, antidepressants, and restraints are not helpful and may make the situation worse. Imaging modalities are not helpful in the absence of localizing signs.

Ref: Clinical Practice Guideline for Postoperative Delirium in Older Adults. American Geriatrics Society, 2014.

Item 229

ANSWER: B

Torus palatinus is an exostosis, or benign bony overgrowth. It is usually located on the midline of the hard palate, and occurs in 12%–27% of the population. Since these are usually not symptomatic many people are not even aware of their presence.

Torus palatinus is easily diagnosed from the history and physical examination. Imaging studies are usually unnecessary. These growths typically enlarge gradually throughout life but have no potential for malignant transformation.

Ref: Ladizinski B, Lee KC: A nodular protuberance on the hard palate. JAMA 2014;311(15):1558-1559.

Item 230

ANSWER: E

Undiagnosed vitamin D deficiency is not uncommon, and 25-hydroxyvitamin D is the barometer for vitamin D status. Although there is no consensus on optimal levels of 25-hydroxyvitamin D as measured in serum, vitamin D deficiency is defined by most experts as a 25-hydroxyvitamin D level <20 ng/mL (50 nmol/L).

Ref: Rosen CJ: Vitamin D insufficiency. N Engl J Med 2011;364(3):248-54. 2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 25. Elsevier Saunders, 2016, p 1446.

Item 231

ANSWER: A

Sharply demarcated lesions with raised borders surrounding a paler region containing a darker center (target or iris lesions) are characteristic of erythema multiforme. The lesions of erythema multiforme usually appear on the distal extremities, are often accompanied by burning and pruritus, and may progress centrally. Usually the rash resolves spontaneously within 4–6 weeks but some patients experience frequent recurrences. Erythema multiforme results from a hypersensitivity reaction to any number of medications, vaccine preparations, or infections, the most commonly identified being herpes simplex virus (HSV) infection. In a minority of those harboring HSV infection, recurrent outbreaks of erythema multiforme are often associated with HSV reactivations, even those that may occur unnoticed. Continuous antiviral treatment using acyclovir, valacyclovir, or famciclovir has been shown to be effective in reducing or eliminating the frequency of recurrent outbreaks in these patients (SOR A). In patients not helped by daily antiviral suppressive therapy, treatment with dapsone, azathioprine, cyclosporine, and thalidomide have been used with some success, but evidence-based data supporting the use of these drugs is limited.

Ref: Lamoreux MR, Sternbach MR, Hsu WT: Erythema multiforme. Am Fam Physician 2006;74(11):1883-1888. 2) Wetter DA, Davis MD: Recurrent erythema multiforme: Clinical characteristics, etiologic associations, and treatment in a series of 48 patients at Mayo Clinic, 2000 to 2007. J Am Acad Dermatol 2010;62(1):45-53.

Item 232

ANSWER: A

Fluoxetine is the only medication with consistent evidence showing that it improves depression symptoms in children and adolescents, including a Cochrane review of three randomized trials. Escitalopram is licensed for treatment of depression in children 12 and over, and consensus guidelines also recommend the use of citalopram and sertraline as first-line treatment in children and adolescents. However, these drugs do not have the same level of evidence for their effectiveness as fluoxetine.

Tricyclic antidepressants have not been shown to be more effective than placebo and should not be used (SOR A). All antidepressants carry a black box warning about an increased risk of suicide with their use in younger patients. It is recommended that children and adolescents be monitored closely, including weekly contact. Psychotherapy should be used in conjunction with pharmacologic treatment.

Aripiprazole, a second-generation antipsychotic medication, would not be indicated. Paroxetine should not be used in young people because of its association with increased suicide risk.

Ref: Clark MS, Jansen KL, Cloy JA: Treatment of childhood and adolescent depression. Am Fam Physician 2012;86(5):442-448.

Item 233

ANSWER: E

Lice, scabies, and secondary bacterial infections are endemic in the homeless. Body lice transmit Bartonella quintana, which causes trench fever. This disease got its name in World War I, when soldiers in the trenches were often infested with body lice. This is a serious disease that can be treated with antibiotics.

Ref: National Center for Emerging and Zoonotic Infectious Diseases: Bartonella infection (cat scratch disease, trench fever, and Carrión's disease). Centers for Disease Control and Surveillance, 2012. 2) Maness DL, Khan M: Care of the homeless: An overview. Am Fam Physician 2014;89(8):634-640.

Item 234

ANSWER: D

This patient's clinical picture is most concerning for giant cell arteritis (also known as temporal arteritis). This condition is a type of vasculitis and in its most serious form can lead to blindness. It is most common in the elderly and is twice as common in women as in men. Because of its inflammatory nature, patients commonly have systemic symptoms, including fever. The temporal artery may be thickened, tender, or lacking pulsation, although a normal artery does not rule out the diagnosis. Jaw claudication is a fairly specific but nonsensitive finding.

The laboratory finding most classically associated with giant cell arteritis is an elevated erythrocyte sedimentation rate (ESR). Only 4% of patients with biopsy-proven giant cell arteritis have a normal ESR. However, a high ESR is nonspecific and may be caused by other conditions. Because the treatment for giant cell arteritis involves high-dose corticosteroids, which may cause significant morbidity, most clinicians favor confirmation of the diagnosis with a temporal artery biopsy prior to committing a patient to full treatment. MRI and CT would be used in the evaluation of other causes of headaches, including a cerebral hemorrhage or mass. A lumbar puncture would identify benign intracranial hypertension or meningitis, and an EEG would be helpful for evaluating seizures.

Ref: Caylor TL, Perkins A: Recognition and management of polymyalgia rheumatica and giant cell arteritis. Am Fam Physician 2013;88(10):676-684. 2) Weyand CM, Goronzy JJ: Giant-cell arteritis and polymyalgia rheumatica. N Engl J Med 2014;371(1):50-57.

Item 235

ANSWER: B

The American Academy of Pediatrics (AAP) recommends antibiotic therapy for children 6 months of age or older with severe signs and symptoms of acute otitis media (AOM), including moderate or severe otalgia or otalgia for more than 48 hours, or a temperature ≥39°C (102°F), whether the AOM is unilateral or bilateral (SOR B). Children younger than 24 months without severe symptoms should receive antibiotic therapy for bilateral AOM, whereas older children or those with unilateral AOM can be offered the option of observation and follow-up.

The usual treatment for AOM is amoxicillin, but an antibiotic with additional β-lactamase coverage, such as amoxicillin/clavulanate, should be given if the child has received amoxicillin within the past 30 days, has concurrent purulent conjunctivitis, or has a history of AOM unresponsive to amoxicillin (SOR C). Penicillin-allergic patients should be treated with an alternative antibiotic such as cefdinir, cefuroxime, cefpodoxime, or ceftriaxone.

Ref: Lieberthal AS, Carroll AE, Chonmaitree T, et al: The diagnosis and management of acute otitis media. Pediatrics 2013;131(3):e964-e999.

Item 236

ANSWER: B

An inhaled daily low-dose corticosteroid plus occasional use of as-needed inhaled albuterol is the best regimen for the treatment of exercised-induced bronchospasm. Daily use of short-acting β_2-agonists can lead to overuse and tolerance. Long-acting β_2-agonists should not be used without the concomitant use of an inhaled corticosteroid. Chronic oral corticosteroids are not indicated in this situation, and may require a therapeutic use exemption by the sports authority overseeing athletic competitions. Immunotherapy has limited benefit for the treatment of asthma.

Ref: Boulet LP, O'Byrne PM: Asthma and exercise-induced bronchoconstriction in athletes. N Engl J Med 2015;372(7):641-648.

Item 237

ANSWER: B

Ultrasonography is the preferred initial imaging modality for suspected acute cholecystitis or cholelithiasis (SOR C). If ultrasound findings are equivocal, contrast CT, cholescintigraphy, or contrast MRI can be used as second-line imaging modalities (SOR C). While useful in evaluating abdominal pain in some cases, a plain radiograph would not be an appropriate first-line evaluation when cholecystitis or cholelithiasis is suspected.

Ref: Crownover BK, Bepko JL: Appropriate and safe use of diagnostic imaging. Am Fam Physician 2013;87(7):494-501. 2) Yarmish GM, Smith MP, Rosen MP, et al: ACR appropriateness criteria right upper quadrant pain. J Am Coll Radiol 2014;11(3):316-322.

Item 238

ANSWER: E

The recommended management for patients who have non-severe Salmonella infection and are otherwise healthy is no treatment. Patients with high-risk conditions that predispose to bacteremia, and those with severe diarrhea, fever, and systemic toxicity or positive blood cultures should be treated with levofloxacin, 500 mg once daily for 7–10 days (or another fluoroquinolone in an equivalent dosage), or with a slow intravenous infusion of ceftriaxone, 1–2 g once daily for 7–10 days (14 days in patients with immunosuppression).

Ref: DuPont HL: Acute infectious diarrhea in immunocompetent adults. N Engl J Med 2014;370(16):1532-1540.

Item 239

ANSWER: E

This child has cervical lymphadenitis, characterized by systemic symptoms, unilateral lymphadenopathy, skin erythema, node tenderness, and a node that is 2–3 cm in size. The most common organisms associated with lymphadenitis are Staphylococcus aureus and group A Streptococcus. Empiric antibiotic therapy with observation for 4 weeks is acceptable for children with presumed reactive lymphadenopathy (SOR C). If symptoms do not resolve, or if the mass increases in size during antibiotic treatment, further evaluation is appropriate.

When imaging is indicated, ultrasonography is the preferred initial study for most children with a neck mass. CT with intravenous contrast media is the preferred study for evaluating a malignancy or a suspected retropharyngeal or deep neck abscess that may require surgical drainage. If the initial mass is suspicious for malignancy (>3.0 cm in size, hard, firm, immobile, and accompanied by type B symptoms such as fever, malaise, weight loss, or night sweats) immediate referral to a surgeon for evaluation and possible biopsy is appropriate.

Ref: Meier JD, Grimmer JF: Evaluation and management of neck masses in children. Am Fam Physician 2014;89(5):353-358.

Item 240

ANSWER: B

This normotensive diabetic patient, appropriately screened for microalbuminuria, should have this finding confirmed on at least one of two additional spot tests, since temporary factors other than nephropathy can also result in microalbuminuria. Once a diagnosis of chronic kidney disease is confirmed, renal ultrasonography should be ordered to detect potentially reversible causes.

A 24-hour urine is not necessary since the urine microalbumin/creatinine ratio correlates well with a 24-hour urine for albumin. Metformin is not contraindicated in the presence of microalbuminuria alone without a decline in the glomerular filtration rate. The patient is already on high-intensity statin therapy and there is no specific indication to increase the statin dosage based on his current LDL-cholesterol level since treatment to the target LDL-cholesterol goal has fallen out of favor.

Ref: KDOQI: KDOQI clinical practice guidelines and clinical practice recommendations for diabetes and chronic kidney disease. Am J Kidney Dis 2007;49(2 Suppl 2):S12–S154. 2) Roett MA, Liegl S, Jabbarpour Y: Diabetic nephropathy—The family physician's role. Am Fam Physician 2012;85(9):883-889. 3) Stone NJ, Robinson JG, Lichtenstein AH, et al: 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014;63(25 Pt B):2889-2934.