American Board of Family Medicine

IN-TRAINING EXAMINATION

TIME–4 HOURS

1. A 52-year-old female with morbid obesity is incidentally noted to have mildly elevated AST (SGOT) levels. She does not consume alcohol and denies using recreational drugs. A workup for chronic viral hepatitis and hemochromatosis is negative.

   Which one of the following is most likely to improve her hepatic condition?

   A) Pentoxifylline
   B) Simvastatin (Zocor)
   C) L-carnitine
   D) Vitamin E
   E) Weight loss

2. A 44-year-old male with papulopustular rosacea sees you for follow-up. You have been treating his condition with topical azelaic acid (Finacea), and although his condition is improved he is not satisfied with the results.

   You suggest adding which one of the following oral medications?

   A) Clarithromycin (Biaxin)
   B) Clindamycin (Cleocin)
   C) Doxycycline
   D) Erythromycin
   E) Metronidazole (Flagyl)

3. A 52-year-old male has a skin lesion removed from his arm with appropriate sterile precautions. Which one of the following would be most appropriate to use on this surgical wound?

   A) Petrolatum
   B) Silver sulfadiazine (Silvadene) cream
   C) Mupirocin (Bactroban) ointment
   D) Polymyxin B/bacitracin ointment (Polysporin)
   E) Triple-antibiotic (neomycin/polymyxin B/bacitracin) ointment

4. A 15-year-old male is brought to the office for a well child visit. His parents report that he has had a nighttime cough and wheezing for the past several months. He is otherwise healthy and up-to-date on all of his immunizations. You suspect that he has asthma.

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

   A) Treat empirically with a short-acting β-agonist
   B) Perform spirometry
   C) Order radiologic testing
   D) Start an inhaled corticosteroid
   E) Start a leukotriene inhibitor

5. A 36-year-old female presents with a several-week history of polyuria and intense thirst. She currently takes no medications. On examination her blood pressure and pulse rate are normal, and she is clinically euvolemic. Laboratory tests, including serum electrolyte levels, renal function tests, and plasma glucose, are all normal. A urinalysis is significant only for low specific gravity. Her 24-hour urine output is >5 L with low urine osmolality.

   The most likely cause of this patient's condition is a deficiency of

   A) angiotensin II
   B) aldosterone
   C) renin
   D) insulin
   E) arginine vasopressin

6. A 39-year-old female presents with lower abdominal/pelvic pain. On examination, with the patient in a supine position, you palpate the tender area of her lower abdomen. When you have her raise both legs off the table while you palpate the abdomen, her pain intensifies.

   Which one of the following is the most likely diagnosis?

   A) Appendicitis
   B) A hematoma within the abdominal wall musculature
   C) Diverticulitis
   D) Pelvic inflammatory disease
   E) An ovarian cyst

7. Which one of the following is one of the five basic principles of the patient-centered medical home?

   A) Utilizing the latest research and advances in treatment and diagnosis
   B) Coordinating a patient's care across all elements of the health care system
   C) Acting as a gatekeeper to limit access to specialist care
   D) Serving as the base of a pyramid in support of a complex health care system
   E) Transitioning away from delivering care in an office, and focusing on meeting patients in their own homes

8. Mild cognitive impairment is characterized by which one of the following?

   A) Localized motor dysfunction
   B) Impairment in at least one activity of daily living
   C) Impairment in at least one instrumental activity of daily living
   D) The presence of the APO E4 allele
   E) Objective evidence of memory decline

9. A healthy 24-year-old male presents with a sore throat of 2 days' duration. He reports mild congestion and a dry cough. On examination his temperature is 37.2°C (99.0°F). His pharynx is red without exudates, and there are no anterior cervical nodes. His tympanic membranes are normal, and his chest is clear.

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

   A) Analgesics and supportive care only
   B) A rapid strep test
   C) A throat culture and empiric treatment with penicillin
   D) Azithromycin (Zithromax)

10. Routine vaccination against which one of the following organisms has significantly reduced the risk of bacterial meningitis among young children?

   A) Borrelia burgdorferi
   B) Escherichia coli
   C) Haemophilus influenzae
   D) Listeria monocytogenes
   E) Mycoplasma pneumoniae

11. To prevent joint damage from gout, uric acid levels should be lowered by medication to

   A) < 6.0 mg/dL
   B) < 8.0 mg/dL
   C) < 10.0 mg/dL
   D) a level that keeps the patient symptom-free for 6 months

12. A 30-year-old female sees you because of increasing fatigue. She has no chronic medical problems and reports no recent acute illnesses. She recalls being told that she was mildly anemic after the birth of her daughter 3 years ago. The anemia resolved after 3 months of oral iron supplementation. The patient's menstrual periods are regular and last approximately 6 days, with heavy bleeding for the first 3 days then moderate to mild flow for approximately 3 days. She denies epistaxis, black stools, or other signs of bleeding.

   On examination her temperature is 36.7°C (98.1°F), pulse rate 93 beats/min, respiratory rate 16/min, and blood pressure 116/58 mm Hg. The remainder of her physical examination is unremarkable. A CBC is notable for a hemoglobin level of 10.9 g/dL (N 12.0–16.0) and a mean corpuscular volume of 70 μm^3 (N 78–102).

   Which one of the following serum levels would be most appropriate for further evaluating her microcytic anemia at this point?

   A) Ferritin
   B) Folate
   C) Erythropoietin
   D) Hemoglobin A_{1c}
   E) TSH

13. An elderly male who has an implanted cardioverter-defibrillator is admitted to long-term care. He has several chronic comorbidities, including hypertension, a previous stroke, coronary artery disease, osteoarthritis, advanced chronic systolic heart failure, chronic kidney disease with a calculated glomerular filtration rate of 20 mL/min/1.73 m^2, diabetes mellitus, and hypercholesterolemia.

    The patient's quality of life has declined to the point that he wishes to receive only palliative care. He does not want aggressive treatments, including hospitalization, except for reasons of comfort. He has decided he does not wish to be resuscitated, including CPR or intubation.

    When considering his goals, and after consultation with the patient and his spouse, which one of the following would be most appropriate for managing his defibrillator?

    A) Adjust the defibrillator to deliver shocks only for ventricular fibrillation
    B) Adjust the defibrillator to deliver shocks only for a heart rate >140 beats/min
    C) Remove the defibrillator generator
    D) Deactivate the defibrillator
    E) Make no change to the defibrillator

14. A 50-year-old male with difficult-to-control hypertension seeks your advice regarding progressive breast enlargement. Your examination reveals bilateral firm, glandular tissue in a concentric mass around the nipple-areola complex. You diagnose gynecomastia.

    Which one of the following antihypertensive medications is most likely to cause this problem?

    A) Doxazosin (Cardura)
    B) Hydrochlorothiazide
    C) Lisinopril (Prinivil, Zestril)
    D) Losartan (Cozaar)
    E) Spironolactone (Aldactone)

15. A large wooden splinter went deep into the forearm of a 24-year-old male while he was working in a horse barn, and he has required local anesthesia and a small incision to remove it completely. After thorough wound cleansing, you inquire about his tetanus status. He is certain that he received all of his primary childhood vaccines and a "tetanus booster" at age 20, but does not know which vaccine he received.

    Which one of the following is the best choice for this patient regarding tetanus immunization at this time?

    A) TT (tetanus toxoid)
    B) Td (tetanus toxoid with reduced diphtheria)
    C) Tdap (tetanus toxoid with reduced diphtheria and acellular pertussis)
    D) TIG (tetanus immune globulin)
    E) No immunization

16. A previously healthy 16-year-old male presents to your office after having a syncopal episode at the start of track practice. An EKG revealed a QTc of 520 ms. This was confirmed on a subsequent EKG.

This finding is associated with which one of the following rhythm abnormalities?

A) Sinus arrest
B) Third degree atrioventricular block
C) Paroxysmal supraventricular tachycardia
D) Polymorphic ventricular tachycardia
E) Atrial fibrillation with a rapid ventricular response

17. Which one of the following intravenous agents is the best INITIAL management for hypercalcemic crisis?

A) Furosemide
B) Pamidronate
C) Hydrocortisone
D) Saline

18. An 84-year-old male is walking across the street and has to hurry to avoid oncoming traffic. He suddenly develops extreme pain in his knee and falls down, and has to be carried to the sidewalk.

The following day he comes to the emergency department. He is comfortable when placed in a knee immobilizer, but is very tender just above the patella. He can bend his knee but when he tries to straighten his leg it is so weak that he cannot move it at all. Radiographs of the knee are shown below.

What is the most likely diagnosis?

A) Patellar tendon rupture
B) Quadriceps tendon rupture
C) Tibial plateau fracture
D) Patellar subluxation
E) Lumbar radiculopathy

19. A 58-year-old postmenopausal female presents with a recent onset of painless vaginal bleeding. Her last menses occurred 8 years ago and she has had no bleeding until now. She reports that her Papanicolaou smears have always been normal, with the last one obtained a year ago. A pelvic examination today is normal.

Which one of the following management options is the preferred next diagnostic step?

A) Colposcopy with endocervical curettage
B) Transvaginal ultrasonography
C) Saline infusion sonohysterography
D) Hysteroscopy

20. A 67-year-old male is admitted to your inpatient service with a week-long acute exacerbation of COPD. He also has hypertension and type 2 diabetes mellitus. After 24 hours of intravenous fluids and intravenous methylprednisolone, he is now tolerating oral intake.

    Which one of the following corticosteroid regimens is best for this patient at this time?

    A) Continue intravenous methylprednisolone until his COPD is back to baseline, then switch to oral methylprednisolone for a 14-day total course of treatment
    B) Switch to oral prednisone for a 14-day total course of treatment, including the initial 24-hour intravenous treatment
    C) Switch to oral prednisone for 4 more days of treatment
    D) Use only inhaled corticosteroids by nebulizer
    E) Discontinue corticosteroid treatment altogether after 24 hours

21. Which one of the following medications used for anxiety has also been shown to reduce the symptoms of irritable bowel syndrome?

    A) Buspirone
    B) Clonazepam (Klonopin)
    C) Divalproex sodium (Depakote)
    D) Risperidone (Risperdal)
    E) Citalopram (Celexa)

22. Which one of the following ethnic groups in the United States is at greatest risk for complications from influenza?

    A) African-American
    B) Asian-American
    C) Mexican-American
    D) Native American
    E) Scandinavian-American

23. The Infectious Diseases Society of America recommends which one of the following as the drug of choice for group A streptococcal pharyngitis?

    A) Azithromycin (Zithromax)
    B) Cefadroxil
    C) Cephalexin (Keflex)
    D) Clindamycin (Cleocin)
    E) Penicillin

24. A 7-year-old Hispanic female has a 3-day history of a fever of 104.0°F (40.0°C), muscle aches, vomiting, anorexia, and headache. Over the past 12 hours she has developed a painless maculopapular rash that includes her palms and soles but spares her face, lips, and mouth. She has recently returned from a week at summer camp in Texas. Her pulse rate is 140 beats/min, and her blood pressure is 70/40 mm Hg.

Which one of the following is the most likely diagnosis?

A) Mucocutaneous lymph node syndrome
B) Leptospirosis
C) Rocky Mountain spotted fever
D) Scarlet fever
E) Toxic shock syndrome

25. A 76-year-old male with metastatic cancer, diabetes mellitus, and stage IV chronic renal disease develops confusion and myoclonus. His current medications include enalapril (Vasotec), 10 mg/day; glipizide (Glucotrol), 10 mg/day; and morphine sulfate, 30 mg every 4 hours for pain. The morphine was started 4 weeks ago and the dosage was gradually increased until the pain was controlled.

Which one of the following is the most likely cause of his symptoms?

A) A drug-drug interaction
B) Metastasis to the lumbar spine
C) Diabetic neuropathy
D) Toxic metabolites of morphine

26. A 29-year-old female presents with redness of her left eye. She has just returned from a summer beach vacation with her children and woke up with a red eye. Your examination reveals a watery discharge, a hyperemic conjunctiva, and a palpable preauricular lymph node. Her cornea is clear on fluorescein staining.

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

A) Reassurance only
B) Culture-guided antibiotic therapy
C) Quinolone eyedrops
D) Corticosteroid/antibiotic eyedrops
E) Urgent ophthalmologic referral

27. A 75-year-old female is evaluated in the emergency department in the evening for heart failure. She is acutely symptomatic with dyspnea. Vital signs include a pulse rate of 96 beats/min, a blood pressure of 140/90 mm Hg, and an oxygen saturation of 94% on room air. A chest radiograph shows mild pulmonary congestion.

Which one of the following would be most appropriate regarding placement of an indwelling urinary catheter for accurate measurement of urine output and for patient comfort?

A) Avoiding indwelling urinary catheter placement
B) Placement of an indwelling urinary catheter only until initial diuresis is completed
C) Placement of an indwelling urinary catheter and removal when the patient is transferred out of the emergency department
D) Placement of an indwelling urinary catheter until 6:00 a.m. tomorrow
E) Placement of an indwelling urinary catheter and removal within 24 hours

28. A 75-year-old male with a history of hypertension sees you after experiencing an episode of numbness on his right side and loss of strength in his right arm. The numbness and weakness resolved spontaneously within 20 minutes. Carotid Doppler ultrasonography and cerebral angiography both reveal significant carotid stenosis.

In addition to starting aspirin, which one of the following would be the most appropriate next step for this patient?

A) Aggressive lowering of blood pressure
B) Clopidogrel (Plavix)
C) Carotid artery stenting
D) Evaluation for occult patent ductus arteriosus
E) High-dose statin therapy

29. A 57-year-old female is hospitalized for hypotension. She has stage IV breast cancer with extensive visceral and skeletal metastases. For the past 2 weeks she has had fatigue, nausea, and anorexia. She also reports a 3-lb weight loss during this time. She decided to stop chemotherapy 1 month ago.

The patient appears pale with a pulse rate of 78 beats/min and a blood pressure of 82/54 mm Hg. Her physical examination is unremarkable except for lower thoracic spine tenderness on percussion. Laboratory studies reveal a serum sodium level of 132 mEq/L, a potassium level of 5.2 mEq/L, and a hemoglobin level of 10.5 g/L. Chest radiographs reveal scattered pulmonary metastatic lesions. The patient is started on intravenous fluid resuscitation with normal saline. On day 2 her blood pressure continues to remain low despite aggressive fluid replacement.

Which one of the following should be administered next to manage her hypotension?

A) Broad-spectrum antibiotics
B) Dobutamine
C) Dopamine
D) Hydrocortisone
E) Packed RBCs

30. Which one of the following is the most accurate imaging study for assessing early osteomyelitis?

A) Plain radiography
B) Ultrasonography
C) CT
D) MRI
E) A bone scan

31. A 43-year-old asymptomatic male is found to have slightly elevated ALT (SGPT) and AST (SGOT) levels on laboratory work prior to donating blood. He feels well and is otherwise healthy.

Which one of the following should be ordered to evaluate the patient for hereditary hemochromatosis?

A) A serum iron panel, including a serum ferritin level and transferrin saturation
B) An α-fetoprotein (AFP) level
C) HFE genetic testing
D) Hepatic ultrasonography
E) A liver biopsy

32. Which one of the following findings on pulmonary function testing is most consistent with restrictive lung disease?

A) Reduced FEV_1 and a decreased FEV_1/FVC ratio
B) Reduced FEV_1 and a normal FEV_1/FVC ratio
C) Reduced FEV_1 and an increased FEV_1/FVC ratio
D) Reduced FVC and an increased FEV_1/FVC ratio
E) Decreased diffusing capacity of the lung for carbon monoxide (DLCO)

33. The parents of a 4-year-old male bring him in for evaluation because of behavioral problems in his preschool. They report that he is inattentive, hyperactive, and impulsive, has difficulty remaining seated, always seems to be moving, frequently interrupts others, and talks incessantly. His teacher also told them that he never plays quietly, has difficulty taking turns, and intrudes often in other children's play.

Which one of the following is recommended by the American Academy of Pediatrics for initial management in this child's case?

A) Behavioral treatment alone
B) Methylphenidate (Ritalin) alone
C) Atomoxetine (Strattera) alone
D) Methylphenidate combined with behavioral treatment
E) Methylphenidate combined with atomoxetine

34. A 56-year-old male with diabetes mellitus and hypertension presents with a 6-month history of generalized pruritus. He reports that he scratches frequently. On examination his skin is dry and scaly. He has multiple linear excoriations and thickened skin on his forearms, legs, and neck.

Which one of the following is the most likely cause of his pruritus?

A) Contact dermatitis
B) Chronic urticaria
C) Lichen simplex chronicus
D) Scabies

35. A 50-year-old female with a history of refractory hypertension presents with abdominal pain. Her laboratory results are significant for a positive Helicobacter pylori antibody. You decide to initiate treatment for her H. pylori infection with sequential therapy using the following drug regimen: rabeprazole (Aciphex) plus amoxicillin, followed by clarithromycin (Biaxin) plus tinidazole (Tindamax). She is currently on multiple medications for her hypertension.

Which one of her antihypertensive agents would be most affected by the treatment regimen described?

A) Amlodipine (Norvasc)
B) Clonidine transdermal (Catapres-TTS)
C) Hydrochlorothiazide
D) Metoprolol tartrate (Lopressor)
E) Ramipril (Altace)

36. A 65-year-old female presents with an 11-mm lesion on her nasolabial fold. You perform a shave biopsy that confirms basal cell carcinoma.

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

A) Excision with wide margins
B) Electrodesiccation and curettage
C) Mohs micrographic surgery
D) Cryotherapy
E) Imiquimod (Aldara) cream

37. A 39-year-old female presents with a 4-month history of gradually worsening left elbow pain. She does not recall an injury but frequently lifts and holds her 10-month-old son in her left arm. She has tenderness over the lateral epicondyle. Her elbow range of motion is normal but she has pain with supination and pronation. The remainder of the examination is normal.

For long-term pain relief, the best evidence supports which one of the following?

A) Expectant/conservative management
B) Physical therapy
C) Oral anti-inflammatory agents
D) A corticosteroid injection

38. Azithromycin (Zithromax) is prescribed for a 65-year-old male with coronary artery disease. This drug should be used with caution in this patient due to an increased risk for

A) an adverse effect on left ventricular function
B) peripheral edema
C) elevation of systolic blood pressure
D) fatal arrhythmias

39. A 62-year-old female with type 2 diabetes mellitus routinely has fasting blood glucose levels in the 80–100 mg/dL range and her hemoglobin A_{1c} level is 7.8%. She has been diligently monitoring her blood glucose levels and all are acceptable with the exception of elevated bedtime readings. She currently is on insulin glargine (Lantus), 18 U at night.

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

A) Adding rapid-acting insulin at breakfast
B) Adding rapid-acting insulin at lunch
C) Adding rapid-acting insulin at dinner
D) Increasing the nightly insulin glargine dose
E) Increasing the insulin glargine dosage and giving two-thirds in the morning and one-third at night

40. A 56-year-old male is brought to the emergency department by his wife because of a 3-day history of fever up to 102.1°F (38.9°C). He complains of headache, body aches, and a cough. His wife notes that he seems to be confused at times, and mentions that he has type 2 diabetes mellitus.

On examination the patient's temperature is 38.7°C (101.7°F), heart rate 113 beats/min, blood pressure 96/64 mm Hg, respiratory rate 24/min, and oxygen saturation 93% on room air. You administer 2 L of oxygen via nasal cannula and his oxygen saturation rises to 98%. A CBC, blood cultures, and a basic metabolic panel are ordered, as well as a chest radiograph and urinalysis.

In addition to starting antibiotics, which one of the following would be most appropriate at this point?

A) A bolus of normal saline
B) Bicarbonate therapy
C) Vasopressin (Pitressin)
D) Hydrocortisone intravenously
E) Norepinephrine

41. A 4-year-old male is brought to your office by his parents who are concerned that he is increasingly "knock-kneed." His uncle required leg braces as a child, and the parents are worried about long-term gait abnormalities. On examination, the patient's knees touch when he stands and there is a 15° valgus angle at the knee. He walks with a stable gait.

    Which one of the following should you do now?

    A) Refer to orthopedics for therapeutic osteotomy
    B) Refer to physical therapy for customized bracing
    C) Prescribe quadriceps-strengthening exercises
    D) Provide reassurance to the patient and his family

42. A 71-year-old female with a history of hypertension and osteoporosis presents to your office for preoperative clearance for upcoming eye surgery. She complains of progressively worsening fatigue over the past 8–10 months. She says she often feels dizzy but denies a history of syncope. Her current medications include alendronate and hydrochlorothiazide. You obtain the EKG shown below as part of her preoperative evaluation.

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

    A) Clearance for eye surgery with no further evaluation
    B) An exercise treadmill test
    C) A 48-hour Holter monitor
    D) A 7-day event monitor
    E) Referral to a cardiologist for pacemaker placement

43. You are treating an 18-year-old college freshman for allergic rhinitis. It is September, and he tells you that he has severe symptoms every autumn that impair his academic performance. He has a strongly positive family history of atopic dermatitis.

    Which one of the following intranasal medications is considered optimal treatment for this condition?

    A) Glucocorticoids
    B) Cromolyn sodium
    C) Decongestants
    D) Antihistamines

44. One week after a complete and adequate baseline screening colonoscopy, a 51-year-old female with no history of previous health problems visits you to review the pathology report on the biopsy specimen obtained from the solitary 8-mm polyp discovered in her sigmoid colon. The report confirms that this was a hyperplastic polyp. Her family history is negative for colon cancer.

Which one of the following is the most appropriate interval for follow-up colonoscopy in this patient?

A) 1 year
B) 2 years
C) 5 years
D) 10 years

45. A 55-year-old overweight male presents with a complaint of pain in the left big toe. He recently started jogging 2 miles a day to try to lose weight, but has not changed his diet and says he drinks 4 cans of beer every night. The pain has developed gradually over the last 2 weeks and is worse after running.

An examination shows a normal foot with tenderness and swelling of the medial plantar aspect of the left first metatarsophalangeal joint. Passive dorsiflexion of the toe causes pain in that area. Plantar flexion produces no discomfort, and no numbness can be appreciated.

Which one of the following is the most likely diagnosis?

A) Sesamoid fracture
B) Gout
C) Morton's neuroma
D) Cellulitis

46. A 49-year-old white female is concerned because she has painful, cold fingertips that sometimes turn white when she is hanging out her laundry. Which one of the following medications has been shown to be useful for this patient's condition?

A) Propranolol
B) Nifedipine (Procardia)
C) Ergotamine/caffeine (Cafergot)
D) Cilostazol (Pletal)

47. A 78-year-old male experiences two episodes of near-syncope within several hours. You order an EKG, which is shown below.

Which one of the following does this EKG show?

A) Atrial fibrillation with a slow ventricular response
B) Sinus bradycardia
C) Complete heart block
D) 2:1 Mobitz AV block

48. A disheveled 89-year-old male with dementia who relies on a caregiver for bathing, dressing, shopping, and meal preparation is brought in for continued evaluation of weight loss. No medical cause has been found at this point. On examination a large purplish bruise is noted over his posterior leg and a more faded greenish-yellow bruise is noted over his abdomen, which his caregiver explains by saying that he has fallen several times recently. The patient is also noted to have a large sacral decubitus ulcer.

Which one of the following should you suspect as the cause of bruising in this patient?

A) Senile purpura
B) Thrombocytopenia
C) Leukemia
D) Elder abuse
E) Cushing syndrome

49. A 36-year-old male laborer presents to an urgent care center 5 hours after falling off a ladder. He was 7–8 feet off the ground, and he fell directly on his anterolateral leg as he landed. Weight bearing is painful. Foot pulses are normal, as is a sensorineural examination of the foot and leg. The anterolateral lower leg is quite tender but only slightly swollen, and there is exquisite pain in that area with passive plantar flexion of the great toe. Radiographs of the lower leg and ankle are negative.

In addition to ice, elevation, and analgesia, which one of the following would be most appropriate?

A) Scheduled oral muscle relaxants
B) A 6-day oral corticosteroid taper
C) Physical therapy referral for early mobilization and ultrasound therapy
D) A short leg splint and non–weight bearing for 5–7 days
E) Urgent orthopedic referral for possible fasciotomy

50. A 25-year-old female with hypothyroidism sees you for preconception counseling. Her thyroid problem has been well managed with levothyroxine (Synthroid), 75 μg daily, but she asks your advice about changing her treatment to something more natural now that she is planning to become pregnant.

Which one of the following is the best recommendation for this patient?

A) Continue the current dosage of levothyroxine
B) Reduce the current dosage of levothyroxine to 50 μg daily
C) Change to a comparable dosage of combination levothyroxine/L-triiodothyronine
D) Change to a comparable dosage of desiccated thyroid

51. A 25-year-old female kindergarten teacher comes to your office for evaluation of a cough she has had for 2 weeks. The preceding week she had symptoms of rhinorrhea, mild malaise, low-grade fever, and lacrimation. She reports that episodes of coughing are so severe that vomiting is induced. She was evaluated at a walk-in clinic 1 week ago and was diagnosed with bronchitis. Treatment with hydrocodone cough syrup and amoxicillin has not helped. On examination she has mild rhinorrhea and injected conjunctivae, but her lungs are clear. A chest radiograph is normal and her laboratory results reveal a mild lymphocytosis.

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

    A) Corticosteroid therapy
    B) A sputum culture
    C) A nasopharyngeal culture and polymerase chain reaction testing
    D) Direct fluorescent antibody testing
    E) Serologic testing

52. Blood pressure classification in children is based on

    A) sex, weight, and height
    B) sex, weight, and age
    C) sex, height, and age
    D) weight, height, and age

53. A 45-year-old male with no known medical problems sees you for a general physical examination. Which one of the following screening measures is recommended by the U.S. Preventive Services Task Force for this patient?

    A) A fasting lipid profile
    B) Colorectal cancer screening
    C) Abdominal aortic aneurysm screening
    D) Testicular examination
    E) Prostate-specific antigen (PSA) testing

54. A 35-year-old female with a history of chronic abdominal pain and diarrhea develops tender red nodules on her shins. These findings are most consistent with which one of the following?

    A) Celiac disease
    B) Crohn's disease
    C) Diverticular disease
    D) Irritable bowel syndrome
    E) Clostridium difficile colitis

55. A decrease in which one of the following could be expected from long-term use of postmenopausal estrogen plus progesterone?

A) Ischemic heart disease
B) Dementia
C) All-cause mortality
D) Breast cancer
E) Hip fracture

56. In a patient with symptoms of thyrotoxicosis and elevated free T_4, the presence of thyroid TSH receptor site antibodies would indicate which one of the following as the cause of thyroid gland enlargement?

A) Toxic multinodular goiter
B) Toxic adenoma
C) Hashimoto's (lymphadenoid) thyroiditis
D) Subacute (giant cell) thyroiditis
E) Graves disease

57. Which one of the following is a risk factor for prolonged recovery from a sports-associated concussion?

A) Blurred vision
B) Headache lasting longer than 60 hours
C) Amnesia for the injury
D) Loss of consciousness at the time of injury
E) Convulsions following the injury

58. A 53-year-old obese female presents with left calf swelling and tenderness. Using the Wells criteria you determine that she is at intermediate risk for deep vein thrombosis.

Which one of the following is the most appropriate next step in the evaluation and treatment of this patient?

A) Anticoagulation
B) D-dimer assessment
C) Compression ultrasonography
D) Impedance plethysmography
E) Contrast venography

59. Which one of the following is recommended with regard to the use of osteoporosis medications in elderly patients?

A) Substitution of denosumab (Prolia) for bisphosphonates in patients planning extensive dental work
B) Use of denosumab in patients at increased risk for infection
C) Use of denosumab rather than bisphosphonates in patients with class III or IV renal dysfunction
D) Continuous use of bisphosphonates for 10 years or more

60. A 4-month-old female is brought to your office by her parents for a 3-day history of fever up to 101.7°F (38.7°C). She is fussy and her oral intake is down. She has no rash, no emesis, and no diarrhea. Her urine output is normal. She is in day care 3 days a week.

On examination she is alert but fussy. Her rectal temperature is 38.4°C (101.1°F). The examination is otherwise normal and there are no focal findings of infection. The parents are reliable and you choose to manage the baby as an outpatient.

Which one of the following tests is most likely to be helpful in this situation?

A) A CBC with manual differential
B) A urinalysis and urine culture
C) A chest radiograph
D) C-reactive protein
E) A lumbar puncture

61. A 36-year-old male with a history of complex regional pain syndrome has been on oxycodone (OxyContin) for the past 5 years. His pain is well controlled.

Which one of the following side effects is most likely to occur with long-term chronic use of opioids?

A) Diarrhea
B) Sedation
C) Hypoalgesia
D) Respiratory depression
E) Hypogonadism

62. An asymptomatic 56-year-old male has an echocardiogram that demonstrates trivial mitral regurgitation. Which one of the following is the recommended follow-up for this patient if he remains asymptomatic?

A) No repeat echocardiography
B) Repeat echocardiography in 1 year
C) Repeat echocardiography in 2 years
D) Repeat echocardiography in 5 years
E) Repeat echocardiography in 10 years

63. A 20-year-old offensive lineman who plays football for the small college in your town presents to your office at midseason with pain in his right groin. He describes it as a burning, aching sensation that gets worse when he coughs or strains during a bowel movement, and when he is required to block opponents or push against the blocking sled in practice.

As part of the physical examination, you have the patient stand, and you insert your finger into the inguinal canal and follow the spermatic cord to the internal inguinal ring. When you reach the internal ring the patient reports discomfort. When you ask him to cough and strain the pain increases and you feel an impulse or bulge at the tip of your finger. The remainder of his physical examination is normal.

This patient's history and examination findings are most consistent with which one of the following diagnoses?

A) Athletic pubalgia (sports hernia)
B) Osteitis pubis
C) Adductor muscle tendinopathy
D) Ilioinguinal nerve entrapment
E) Inguinal hernia

64. A 40-year-old runner complains of gradually worsening pain on the lateral aspect of his foot. He runs on asphalt, and has increased his mileage from 2 miles/day to 5 miles/day over the last 2 weeks. Palpation causes pain over the lateral fifth metatarsal. The pain is also reproduced when he jumps on the affected leg. When you ask about his shoes he tells you he bought them several years ago.

Which one of the following is the most likely diagnosis?

A) Ligamentous sprain of the arch
B) Stress fracture
C) Plantar fasciitis
D) Osteoarthritis of the metatarsal joint

65. A 2-year-old female is brought to the urgent care center with a fever and cough. Her symptoms started suddenly a few hours ago with a runny nose and fever to 101°F. On examination the child is crying and has a persistent barking cough but has no stridor or significant respiratory distress. Her lungs are clear to auscultation. Her skin is warm, pink, and well perfused, and her oxygen saturation is 99% on room air. A chest radiograph is normal.

Which one of the following treatments has been shown to improve outcomes for this problem?

A) Humidified air
B) Nebulized albuterol (Proventil, Ventolin)
C) Oral azithromycin (Zithromax)
D) Oral dexamethasone
E) Oxygen therapy

66. An 80-year-old male presents with a 10-day history of intermittent colicky abdominal pain. The pain is low and central and seems to be worse after eating. He has no associated fever or vomiting but does feel nauseated when the pain is present. He says that prior to this episode he had hard stools once or twice a week that were difficult to pass. For the past several days he has had only watery stools, several times a day.

    On examination there is fullness in his left lower quadrant with nonspecific tenderness diffusely and no guarding or rebound. A urine dipstick is normal.

    Which one of the following is the most likely diagnosis?

    A) Viral gastroenteritis
    B) Acute colitis
    C) Constipation
    D) Urinary tract infection
    E) Nephrolithiasis

67. Which one of the following therapeutic interventions improves outcomes in adults with acute respiratory distress syndrome (ARDS)?

    A) Early initiation of antibiotics
    B) Surfactant therapy
    C) Pulmonary artery catheterization
    D) Aggressive intravenous fluid resuscitation
    E) Starting mechanical ventilation with lower tidal volumes

68. According to the Joint Commission's sentinel event program, the most common root cause of serious medical errors is a deficiency of

    A) competency and credentialing
    B) staffing
    C) communication
    D) leadership
    E) organization culture

69. A 4-year-old male sees you for pre-kindergarten screening. On corneal light reflex testing, the light reflex in the patient's right eye is in the center of the pupil. In the left eye it is located below the pupil, over the inferior-lateral portion of the iris.

    This clinical finding is associated with a congenital palsy of which one of the following cranial nerves?

    A) Third
    B) Fourth
    C) Fifth
    D) Sixth
    E) Seventh

70. A 32-year-old primigravida at 36 weeks gestation complains of headaches. She denies vaginal bleeding, leakage of fluid, and contractions, and the fetus is moving normally. Her blood pressure is 155/100 mm Hg and a urinalysis shows 4+ protein. The rest of her examination is normal and a cervical examination shows 1 cm of dilation, 50% effacement, a soft consistency, anterior position, and –2 vertex station. Results of a preeclampsia panel are all in the normal range.

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

A) Start labetalol (Trandate) and discharge home on bed rest with close follow-up
B) Start magnesium sulfate and induce labor now
C) Start magnesium sulfate, administer corticosteroids, and induce labor in 48 hours
D) Start magnesium sulfate, lower blood pressure to 140/90 mm Hg, and induce labor at 37 weeks gestation
E) Arrange for urgent cesarean section

71. A 75-year-old otherwise healthy white female states that she has passed out three times in the last month during her daily brisk walk. Which one of the following is the most likely cause of her syncope?

A) Vasovagal syncope
B) Transient ischemic attack
C) Orthostatic hypotension
D) Atrial myxoma
E) Aortic stenosis

72. A 62-year-old male has a 1-month history of intermittent vomiting, early satiety, and a weight loss of 4 kg (9 lb). Initially he had diarrhea but it has resolved. He does not have abdominal pain or bloody stools. He says that over-the-counter famotidine (Pepcid) has relieved the symptoms somewhat.

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

A) Abdominal radiographs
B) Abdominal ultrasonography
C) Esophagogastroduodenoscopy
D) Famotidine at a higher dosage
E) A proton pump inhibitor

73. An 18-month-old male is brought to your office by his mother. The patient is tugging at both ears and has a temperature of 39.0°C (102.2°F). You diagnose bilateral acute otitis media for the third time in the last 6 months. The most recent infection was 3 weeks ago and resolution of the infection was documented after 10 days of treatment with amoxicillin.

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

A) Amoxicillin, 45 mg/kg/day for 10 days
B) Amoxicillin, 90 mg/kg/day for 10 days
C) Amoxicillin, 90 mg/kg/day for 10 days followed by prophylactic treatment with amoxicillin for 6 months
D) Amoxicillin/clavulanate (Augmentin), 90 mg/kg/day for 10 days
E) Amoxicillin/clavulanate, 90 mg/kg/day for 10 days followed by prophylactic treatment with amoxicillin for 6 months

74. A 36-year-old white female calls you to report that she removed a small blood-engorged tick from her upper arm the previous evening, 3 days after returning from a camping trip in the mountains of New Hampshire.

Which one of the following would you recommend?

A) A single 200-mg dose of doxycycline
B) Doxycycline, 100 mg twice daily for 7 days
C) Azithromycin (Zithromax), 500 mg daily for 7 days
D) Topical mupirocin ointment (Bactroban), twice daily for 3 days
E) No treatment unless she develops the typical erythema migrans rash

75. A 45-year-old female had myalgias, a sore throat, and a fever 2 weeks ago. She now has anterior neck tenderness and swelling, with pain radiating up to her ears. Your examination reveals a tender goiter.

Which one of the following would support a diagnosis of subacute granulomatous thyroiditis?

A) Pretibial myxedema
B) Exophthalmos
C) Multiple nodules on ultrasonography
D) Low radioactive iodine uptake ($<5\%$)

76. A 48-year-old female sees you for routine follow-up. She was diagnosed with type 2 diabetes mellitus 2 years ago and has been treated with metformin (Glucophage), 850 mg orally 3 times daily, and glipizide (Glucotrol XL), 20 mg orally daily, along with diet and exercise. Her other medical problems include hypertension and obesity. She has no known cardiovascular disease or microvascular complications. She came in for laboratory testing yesterday, and her hemoglobin A_{1c} is 8.0% (N <5.7%).

Which one of the following medications would help with both glycemic control and weight loss for this patient?

A) Exenatide (Byetta)
B) Pioglitazone (Actos)
C) Sitagliptin (Januvia)
D) Insulin

77. Which one of the following is the best exercise to improve function in older adults living in nursing homes?

A) Swimming
B) Walking
C) Stretching
D) Stationary bicycling
E) Resistance training

78. A 45-year-old female has been admitted to the hospital for an episode of acute diverticulitis. Which one of the following features would most strongly suggest a need for surgical intervention?

A) A previous admission for diverticulitis in the last 12 months
B) Pain uncontrolled by oral analgesics
C) A microperforation seen on CT at the site of the diverticulitis
D) A 4-cm simple abscess at the site of the diverticulitis
E) The presence of generalized peritonitis

79. A 21-year-old female sees you because of a depressed mood since the birth of her son 2 months ago. She is breastfeeding, and her baby is doing well. She reports no difficulties sleeping, other than what is to be expected when caring for a newborn. She denies any suicidal or homicidal ideation and has never had thoughts about hurting the baby. She has a history of depression 2 years ago that was associated with starting college and feeling very isolated in the dormitory. She began taking sertraline (Zoloft), changed her schedule, and spent more time exercising. Within 6 months her depression resolved and she stopped the medication. She reports this current depression feels worse than her previous depression.

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

A) Amitriptyline
B) Diazepam (Valium)
C) Phenytoin
D) Sertraline
E) Zolpidem (Ambien)

80. An 18-month-old female with atopic dermatitis is brought to your office. She has recently had a flare-up of her condition that has been slow to resolve, and the mother says the child scratches "constantly" despite daily use of emollients.

Which one of the following would be the best treatment?

A) A topical mild-potency corticosteroid
B) Topical pimecrolimus (Elidel)
C) Oral diphenhydramine (Benadryl)
D) Oral cetirizine (Zyrtec)
E) Probiotics

81. A 53-year-old white female with chronic hepatitis C is concerned about ulcers in her mouth. She is not currently receiving therapy. Your examination reveals several ulcers involving the buccal mucosa. The patient also points out a number of pruritic, reddish-purple plaques on her wrists, ankles, and back. Laboratory studies are within normal limits except for mildly elevated transaminases.

Which one of the following is the most likely diagnosis?

A) Behçet's syndrome
B) Lichen planus
C) Aphthous stomatitis
D) Herpetic stomatitis
E) HIV infection

82. An 86-year-old female nursing-home resident has type 2 diabetes mellitus, chronic diastolic heart failure, chronic kidney disease, advanced osteoarthritis, hypertension, Alzheimer's disease, and other comorbidities. She requires assistance with dressing, bathing, and feeding.

For this patient, the American Geriatrics Society recommends a hemoglobin A_{1c} goal of

A) <7.0%
B) <8.0%
C) <8.5%
D) <9.0%
E) <9.5%

83. A new serum marker has been developed for the diagnosis of pulmonary embolism. The test has a likelihood ratio of 1.

Which one of the following conclusions can be made from this information?

A) The test can confirm pulmonary embolism
B) The test rules out pulmonary embolism
C) The test can neither confirm nor rule out pulmonary embolism
D) The likelihood ratio does not determine how well a test performs

84. A gynecologist requests a preoperative consultation on your patient, a 38-year-old white gravida 2 para 0 abortus 2 whom you referred for total abdominal hysterectomy for adenomatous endometrial hyperplasia.

The patient has been hospitalized twice for deep-vein thrombophlebitis in the past 2 years and had spontaneous second-trimester abortions at the ages of 34 and 36. Routine preoperative blood screening reveals the following:

Platelet count	189,000/mm^3 (N 150,000–400,000)
Prothrombin time	12.0 sec (N 10.0–12.5)
INR	1.1
Activated partial thromboplastin time	42 sec (N 25–35)

There is no family history of bleeding disorders and the evaluation is otherwise completely normal.

A repeat activated partial thromboplastin time with a 1:1 mixture of normal plasma does not correct to normal.

The most likely diagnosis is

A) protein C deficiency
B) antiphospholipid antibody syndrome
C) factor VIII deficiency (hemophilia A)
D) chronic liver disease
E) von Willebrand disease

85. A 45-year-old female who is a new patient sees you for a well care visit. She requests all screening tests and procedures that are appropriate for her.

She is unmarried but has been in a monogamous relationship with a male partner for the past 10 years. She reports that she has never had an abnormal Papanicolaou (Pap) test result, but that when she had a Pap test last year she did not have a test for human papillomavirus (HPV). She also had normal findings on a mammogram 1 year ago. Her previous physician had been seeing her every 3 months to monitor her blood pressure, which has consistently been 135–140 mm Hg systolic and 85–90 mm Hg diastolic. She takes no antihypertensive medication, but has instituted dietary and lifestyle changes.

According to the U.S. Preventive Services Task Force, which one of the following screening tests or procedures is now recommended for this patient?

A) A bimanual pelvic examination with CA-125 testing to screen for ovarian cancer
B) A Pap test with co-testing for HPV
C) Screening for Chlamydia
D) Screening for diabetes mellitus
E) Screening for colorectal cancer

86. A 2-week-old female is brought to the office for a well child visit. The physical examination is completely normal except for a clunking sensation and feeling of movement when adducting the hip and applying posterior pressure.

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

A) Referral for orthopedic consultation
B) Reassurance only, and follow-up in 2 weeks
C) Triple diapering and follow-up in 2 weeks
D) A radiograph of the pelvis

87. A 57-year-old female on dialysis for end-stage renal disease develops chronic, severe generalized pain. Which one of the following opioids is preferred for management of her pain?

A) Codeine
B) Fentanyl
C) Hydrocodone
D) Morphine

88. Which one of the following strategies for preventing the spread of Clostridium difficile infection has been shown to be most effective?

A) Use of alcohol-based hand sanitizer
B) Handwashing with soap and water
C) Screening health care providers for the carrier state
D) Administration of probiotics to at-risk patients
E) Use of N95 masks and negative-pressure rooms

89. A 55-year-old female has severe sepsis due to pyelonephritis. Her systolic blood pressure remains at 70 mm Hg despite antibiotics and adequate fluid resuscitation.

Which one of the following should be considered the vasopressor of first choice for this patient?

A) Dopamine
B) Epinephrine
C) Vasopressin (Pitressin)
D) Dobutamine
E) Norepinephrine (Levophed)

90. A 55-year-old male has a 3-month history of chronic shortness of breath and dyspnea on exertion. His physical examination is unremarkable except for 1+ ankle edema bilaterally and a soft systolic murmur. A stress echocardiogram is normal. Pulmonary function tests are normal except for a low diffusing capacity of the lung for carbon monoxide (DLCO).

Which one of the following conditions should be considered in this patient?

A) Chronic pulmonary thromboembolism
B) Emphysema
C) Interstitial lung disease
D) Asthma
E) Hypersensitivity pneumonitis

91. In patients who die from an opioid overdose, a second medication is often present that contributes to the patient's death. Which one of the following additional medications is most likely to be found in conjunction with a fatal opioid overdose?

A) Acetaminophen
B) Antidepressants
C) Antipsychotics
D) Benzodiazepines
E) Muscle relaxants

92. You test a patient's muscle strength and find that his maximum performance consists of the ability to move with gravity neutralized. This qualifies as which grade of muscle strength, on a scale of 0 to 5?

A) 0
B) 1
C) 2
D) 3
E) 4

93. A 21-year-old male comes to your office for a follow-up visit to discuss pharmacologic treatment for his acne. He has moderate inflammatory acne lesions with comedones and several papules and pustules, but few nodules. Multiple topical antibiotic therapies, in combination with benzoyl peroxide, have been minimally effective. He is currently using just topical benzoyl peroxide. You would like to prescribe an oral agent to add to his regimen.

Which one of the following would be the most effective oral medication to start at this time?

A) Amoxicillin
B) Ciprofloxacin (Cipro)
C) Minocycline (Minocin)
D) Prednisone

94. Based on U.S. Preventive Services Task Force guidelines, screening for lung cancer with low-dose CT of the chest is indicated for which one of the following patients with a 30-pack-year smoking history?

A) A 50-year-old current smoker
B) An 85-year-old current smoker
C) A 60-year-old who quit smoking 10 years ago
D) A 75-year-old who quit smoking 20 years ago

95. A 37-year-old male complains of severe headaches that typically involve his right eye, and often cause the eye to tear. The headaches occur at about the same time each day and recur for several days in a row before remitting. He reports that he is currently experiencing a third episode of these headaches.

Which one of the following therapies will help prevent future recurrences of this patient's headaches?

A) Oxygen
B) Sumatriptan (Imitrex)
C) Lithium
D) Verapamil (Calan, Verelan)

96. An 85-year-old male admitted to the hospital for shortness of breath is diagnosed with terminal lung cancer. He decides he would like to receive home hospice care. Over the course of his hospitalization he becomes increasingly confused and forgets where he is and why he is there. He appears depressed with a flat affect. He repeatedly tries to get out of bed and pulls at his IV line and catheter.

Which one of the following medications would be most appropriate for treating these symptoms?

A) Haloperidol
B) Nortriptyline (Pamelor)
C) Pentobarbital (Nembutal)
D) Lorazepam (Ativan)
E) Mirtazapine (Remeron)

97. An 18-month-old male with a history of prematurity at 36 weeks gestation but no baseline lung disease is brought to the emergency department with a fever of 38.3°C (100.9°F), rhinorrhea, cough, wheezing, mild tachypnea, and an oxygen saturation of 88%. A chest radiograph reveals perihilar infiltrates, and a nasal swab is positive for respiratory syncytial virus (RSV) antigen.

Which one of the following management options has evidence of benefit for this patient?

A) Aerosolized ribavirin
B) Supplemental oxygen
C) Intravenous corticosteroids
D) Macrolide antibiotics

98. An 85-year-old male smoker presents with a 6-day history of subacute abdominal pain. He reports nausea without vomiting, and no change in stool. His past medical history includes coronary artery disease, peripheral vascular disease, and a cholecystectomy. The physical examination reveals moderate periumbilical tenderness without guarding or rebound.

Laboratory Findings

WBCs	20,000/mm^3 (N 4500–10,800)
Segmented neutrophils	82%
Bands	7%
Chemistry panel	normal
Urinalysis	normal
Amylase	180 U/L (N < 140)
Lipase	normal
Lactic acid	3.8 mmol/L (N 0.5–2.2)

Abdominal CT reveals air within the wall of dilated loops of small bowel.

Which one of the following is the most likely diagnosis?

A) Acute cholangitis secondary to a common duct stone
B) Acute diverticulitis
C) Acute mesenteric ischemia
D) Acute pancreatitis
E) Acute appendicitis

99. A 75-year-old male reports that his handwriting seems more "cramped," he has started shuffling more as he walks, and he has been experiencing some difficulty turning over in bed, rising from a chair, and opening jars. He also reports increasing body stiffness and a resting tremor in his hand.

Given the stage of his disease, which one of the following options for initial medical management is supported by the best evidence?

A) Amantadine
B) Bromocriptine (Parlodel)
C) Benztropine
D) Carbidopa/levodopa (Sinemet)
E) Entacapone (Comtan)

100. When assessing the nutritional status and growth of a full-term infant, it is useful to know that birth weight is expected to be regained within

A) 5 days
B) 14 days
C) 21 days
D) 28 days

101. A 70-year-old white female with hypertension and atrial fibrillation has been chronically anticoagulated. A higher dosage of warfarin (Coumadin) would be required to achieve a therapeutic INR if the patient were found to have

A) malnutrition
B) hypothyroidism
C) heart failure
D) acute kidney injury
E) progressive nonalcoholic cirrhosis

102. Which one of the following is most likely to cause hypoglycemia in elderly patients?

A) Metformin (Glucophage)
B) Pioglitazone (Actos)
C) Glipizide (Glucotrol)
D) Sitagliptin (Januvia)
E) Glyburide (DiaBeta)

103. A 75-year-old male presents to the emergency department with a 2-day history of pain and swelling in his left calf. He had a total knee replacement 2 weeks ago and was discharged home with a prescription for warfarin (Coumadin). He experienced symptoms of nausea, headache, and fatigue, which he attributed to the medication. He stopped taking the warfarin and now refuses to resume it, and he also does not want to be hospitalized. Ultrasonography confirms thrombosis in the deep veins distal to the popliteal fossa.

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

A) Aspirin
B) Clopidogrel (Plavix)
C) Rivaroxaban (Xarelto)
D) Intravenous tenecteplase (TNKase)

104. A 34-year-old male who recently immigrated to the United States from Mexico comes to your clinic to complete a comprehensive health evaluation for a custodial job at a hospital, and he must be screened for tuberculosis. He recalls getting many vaccines as a child, including one for tuberculosis.

Which one of the following screening tests for tuberculosis is preferred for this patient?

A) A stained sputum culture for acid-fast bacilli
B) Skin testing
C) Serology
D) Nucleic acid amplification testing
E) Interferon-gamma release assays

105. A 53-year-old male complains of fatigue, dyspnea, and orthopnea. Which one of the following would have the highest specificity for heart failure?

A) Ankle edema
B) A third heart sound (S_3 gallop)
C) Crackles
D) Cardiomegaly on a chest radiograph
E) Elevated BNP

106. A 7-year-old male is brought to your office after hurting his hand when he fell on a wet kitchen floor. He is unable to describe the mechanism of injury. On examination the maximal point of tenderness is at the third metacarpophalangeal joint, which also has some generalized swelling but no ecchymosis. Range of motion is limited in this joint due to pain. A radiograph of the hand is shown below.

Which one of the following is the most likely diagnosis?

A) Boxer's fracture
B) Greenstick fracture
C) Salter-Harris type II fracture
D) Spiral fracture
E) No abnormality

107. In a patient presenting with unstable angina, which one of the following findings would denote the highest risk for death or myocardial infarction?

A) New-onset angina beginning 2 weeks to 2 months before presentation
B) Angina with hypotension
C) Angina provoked at a lower threshold than in the past
D) Increased anginal frequency

108. A 72-year-old white female presents to your office with a 6-week history of "tanned skin." She initially attributed it to having gone on a cruise 2 months ago, but noticed her skin continued to darken as time passed. She is slender and has lost 5 kg (11 lb) since her last checkup 6 months ago. She denies fever, malaise, or abdominal pain. Her only medications are hydrochlorothiazide and a baby aspirin daily.

On examination your suspicion of jaundice is confirmed by the presence of scleral icterus. You also note a single enlarged left supraclavicular lymph node which is nontender. The abdomen is soft and nontender; on deep palpation of the right upper quadrant you feel a smooth, nontender mass.

Which one of the following is the most likely diagnosis?

A) Biliary cirrhosis
B) Ascending cholangitis
C) Obstructing pancreatic pseudocyst
D) Carcinoma of the head of the pancreas
E) Hepatocellular carcinoma

109. Hyperbaric oxygen treatment has been shown to be beneficial for which one of the following conditions?

A) Tinnitus
B) Malignant otitis externa
C) Crush injury wounds
D) Nonunion of bone fractures
E) Vascular dementia

110. A 4-year-old female is treated at a local urgent care center with amoxicillin for acute pharyngitis. Several days after starting treatment her initial symptoms resolve. When she is 8 days into the 10-day course of her antibiotic treatment she returns to your office because she has developed a diffuse erythematous maculopapular rash starting on her torso and extending to her proximal extremities.

Which one of the following is the best course of action at this time?

A) Continue the amoxicillin and begin prednisone and diphenhydramine (Benadryl)
B) Continue the amoxicillin and change the diagnosis to scarlet fever
C) Discontinue the amoxicillin and change the diagnosis to viral exanthem
D) Discontinue the amoxicillin and note amoxicillin as a potential allergy in her record

111. An obese 70-year-old male with chronic pain due to osteoarthritis complains of fatigue, anhedonia, hypersomnolence, and increased appetite. Which one of the following would be the best pharmacologic agent for this patient?

A) Duloxetine (Cymbalta)
B) Mirtazapine (Remeron)
C) Citalopram (Celexa)
D) Paroxetine (Paxil)
E) Nortriptyline (Pamelor)

112. A 42-year-old female with a past medical history significant for type 2 diabetes mellitus, hypertension, obesity, and major depressive disorder presents with a chief complaint of amenorrhea for 9 weeks. A home pregnancy test was positive 2 days ago. Her medications include metformin (Glucophage), insulin glargine (Lantus), lisinopril (Prinivil, Zestril), atenolol (Tenormin), fluoxetine (Prozac), and bupropion (Wellbutrin). You confirm her pregnancy with a urine pregnancy test in your office and you believe she is at 11 weeks gestation based on the date of her last menstrual period.

In addition to the lisinopril, which one of her current medications should be discontinued?

A) Atenolol
B) Bupropion
C) Fluoxetine
D) Glargine
E) Metformin

113. A 55-year-old male with diabetes mellitus is found to have asymptomatic microscopic hematuria. The rest of his urinalysis is negative. He has no other medical problems and quit smoking 10 years ago. His only medication is metformin (Glucophage). A urine culture is negative and his renal function is normal. CT urography is also negative.

Which one of the following should be the next step in the evaluation of his microscopic hematuria?

A) Urine cytology
B) Cystoscopy
C) Nephrology referral
D) Stopping metformin and performing a repeat urinalysis
E) Antibiotic therapy

114. A 24-year-old male who just moved to town for a new job presents to your office with a 2-week history of a rash. His previous medical records are not available. The physical examination reveals pink, scaling papules and plaques on the trunk and proximal aspect of the arms and legs. You suspect pityriasis rosea.

To complete the diagnostic evaluation you should order

A) a fungal culture
B) heterophile antibody testing
C) a platelet count
D) a rapid plasma reagin (RPR) test
E) a TSH level

115. A 22-year-old male college student presents with 1–2 weeks of worsening tenesmus associated with frequent stools that are mixed with blood and mucus. He is afebrile and has no other signs of systemic illness. Initial blood and stool testing is normal.

Which one of the following would be most appropriate at this point to evaluate this patient for the presence of inflammatory bowel disease?

A) Serum markers
B) Ultrasonography
C) CT of the abdomen and pelvis
D) Colonoscopy with biopsies
E) A barium enema

116. A 24-year-old gravida 2 para 1 presents to your office for her first prenatal visit at 7 weeks gestation. You review her vaccine records and note that she received Tdap 1 year ago.

When should you recommend that she get her next Tdap?

A) Post partum
B) At this visit
C) Anytime after the first trimester
D) Between 27 and 36 weeks gestation
E) 10 years after the last dose

117. Which one of the following is the most likely cause of acute kidney injury in a patient with eosinophiluria?

A) Rhabdomyolysis
B) Poststreptococcal glomerulonephritis
C) Acute interstitial nephritis
D) Ethylene glycol poisoning
E) Tumor lysis syndrome

118. Which one of the following patients with atrial fibrillation should be advised to use aspirin rather than warfarin (Coumadin) for stroke prevention?

A) A 56-year-old male with type 2 diabetes mellitus and peripheral neuropathy
B) A 60-year-old female with heart failure and a 30-pack-year smoking history
C) A 62-year-old male with obesity and hyperlipidemia
D) A 66-year-old male with hypertension and depression
E) A 75-year-old female with hypothyroidism and osteoarthritis

119. A 77-year-old female is admitted to the critical care unit for acute respiratory failure and is on a ventilator for more than 48 hours. Stress ulcer prophylaxis is ordered.

This prophylaxis should be continued until

A) venous thromboembolism prophylaxis is stopped
B) the patient is transferred out of the critical care unit
C) the patient is discharged from the hospital
D) the patient is discharged from a skilled care or rehabilitation care facility
E) 30 days after discharge from the hospital

120. A 29-year-old female presents with a 1-week history of a rash on her legs. A full review of systems is significant only for regular borderline-heavy periods that lasted for 7 days during her last two menstrual cycles. She has not had any recent illness or hospitalization, and takes no medications. Her examination shows nonblanching purple macules on her upper legs.

A comprehensive metabolic panel reveals normal renal function and liver enzyme tests, and a urine pregnancy test is negative. A CBC reveals a platelet count of 27,000/mm^3 (N 150,000–400,000) but is otherwise normal.

Which one of the following is the most likely cause of the rash?

A) Acute leukemia
B) Congenital thrombocytopenia
C) Immune thrombocytopenic purpura
D) Thrombotic thrombocytopenic purpura
E) Henoch-Schönlein purpura

121. A 24-year-old male presents with a 1-week history of right eye redness. He says his eye hurts, especially with light exposure. He reports no history of trauma, but recalls his 2-year-old daughter having "pink eye" about a month ago. He has a previous history of ankylosing spondylitis.

On examination his conjunctiva appears injected and he has a sluggishly reacting pupil. No discharge is noted. Reduced anterior spine flexion is noted on examination of the back. Fluoroscein staining of the cornea is negative.

Which one of the following is the most appropriate next step to manage this patient's eye condition?

A) Artificial tears
B) Ocular antibiotics
C) Ocular corticosteroids
D) Oral acetazolamide
E) Ophthalmic olopatadine (Patanol)

122. A 36-year-old male is diagnosed with midsubstance Achilles tendinopathy. He has had symptoms for approximately 8 weeks.

For this patient, which one of the following would be the first-line treatment?

A) Tendon massage
B) Eccentric exercise
C) Iontophoresis
D) Therapeutic ultrasound
E) Electrical stimulation therapy

123. A 24-year-old female complains of irritability, anxiety, and feeling restless. These symptoms began 3 months ago after she was in a car accident in which two people died. She has become very socially withdrawn and when she tries to sleep she has flashbacks to the accident.

In addition to recommending trauma-focused psychotherapy, which one of the following medications would be most appropriate?

A) Buspirone
B) Clonazepam (Klonopin)
C) Quetiapine (Seroquel)
D) Topiramate (Topamax)
E) Sertraline (Zoloft)

124. A 58-year-old female presents with a 6-month history of persistent intermittent unilateral rhinorrhea. The drainage is clear, and seems to be worse in the early morning when she first gets up. Her past medical history includes hypertension and controlled migraines. Her surgical history includes a total hysterectomy 5 years ago and septal deviation surgery 7 months ago. She has tried oral antihistamines and intranasal corticosteroids without relief.

The patient should undergo further evaluation for

A) vasomotor rhinitis
B) allergic rhinitis
C) cerebrospinal fluid rhinorrhea
D) an intranasal tumor

125. A 25-year-old female reports the absence of menses for the past 6 months. She is currently not taking any medications. You confirm that she is not pregnant and order additional laboratory testing. TSH, LH, and FSH levels are normal but she has an elevated prolactin level.

Which one of the following would be most appropriate at this point to further evaluate her pituitary gland?

A) A follow-up serum prolactin level in 4 weeks
B) A prolactin-stimulating hormone level
C) MRI of the pituitary
D) Head CT with intravenous contrast

126. A 36-year-old male who participates in his neighborhood basketball league visits your office with a 3-week history of heel pain. On examination he has pain over the medial plantar region of the right heel and the pain is aggravated by passive ankle dorsiflexion.

Which one of the following should you order to confirm the diagnosis?

A) Plain films of the foot
B) Ultrasonography of the foot
C) CT of the foot
D) MRI of the foot
E) No diagnostic imaging

127. According to the U.S. Preventive Services Task Force, low-dose aspirin use in women is most effective for primary prevention of

A) stroke, beginning at age 50
B) stroke, beginning at age 55
C) myocardial infarction, beginning at age 50
D) myocardial infarction, beginning at age 55
E) both myocardial infarction and stroke, beginning at age 50

128. A 6-year-old male is diagnosed with acute bacterial sinusitis. He has a previous history of a rash 5 days after beginning penicillin treatment.

Which one of the following medications is most appropriate for this patient?

A) Amoxicillin/clavulanate (Augmentin)
B) Trimethoprim/sulfamethoxazole (Bactrim)
C) Cefuroxime (Ceftin)
D) Doxycycline
E) Azithromycin (Zithromax)

129. An 85-year-old male is brought to your office by his family because they are concerned that he may be depressed. Which one of the following is most likely in a depressed patient in this age group?

A) Suicidal ideation
B) Somatic symptoms
C) Depressed mood
D) Preoccupation with guilt

130. A 72-year-old previously healthy male presents with a 3-week history of mild, intermittent chest pressure that occurs when he walks up a steep hill. Which one of the following EKG abnormalities would dictate the use of a pharmacologic stress test as opposed to an exercise stress test?

A) First degree atrioventricular block
B) Left bundle branch block
C) Poor R-wave progression in leads V1 through V3
D) Q-waves in the inferior leads
E) Ventricular trigeminy

131. A 20-year-old college student who has been working in the woods on a forestry project presents with a 3- to 4-day history of a severely pruritic rash on his arms, hands, and face. There is erythema with multiple bullae and vesicles, some of which are in a streaked linear distribution on the arms. There are patches of erythema on his face with some vesicles. The itching is intense and he sleeps fitfully.

In addition to cool compresses and antihistamines for the itching, which one of the following is the best treatment option for this patient?

A) Triamcinolone, 20 mg intramuscularly as a single dose
B) A 6-day oral methylprednisolone (Medrol) dose pack, starting at 24 mg
C) A 7- to 10-day course of topical halobetasol propionate (Ultravate), 0.05% ointment
D) A 7- to 10-day course of topical mupirocin (Bactroban) 2%, after decompression of vesicles and bullae
E) A 10- to 14-day tapering course of oral prednisone, starting at 60 mg

132. While making rounds on the rehabilitation floor of your hospital, you see a 62-year-old female who was recently transferred from the acute-care section of the hospital where she was admitted for urosepsis. She is a liver-transplant recipient and her specialist has been tapering her immunosuppressive drug regimen for the last 2 months. According to the nursing staff the patient became hypoxic suddenly and had a low-grade fever and cough. You note that she looks ill and uncomfortable, and has an increased respiratory rate. A chest radiograph reveals diffuse bilateral interstitial infiltrates.

Which one of the following is the most likely diagnosis?

A) Pneumococcal pneumonia
B) Staphylococcal pneumonia
C) Pneumocystis pneumonia
D) Pulmonary tuberculosis
E) Pneumothorax

133. A 45-year-old male is hospitalized for the management of alcohol withdrawal syndrome. His symptoms include tachycardia, diaphoresis, tremors, and visual hallucinations. His CIWA-Ar (Clinical Institute Withdrawal Assessment for Alcohol, Revised) score is 18, indicating moderate alcohol withdrawal.

Which one of the following medications has been shown to reduce the risk of developing seizures in this situation?

A) Carbamazepine (Tegretol)
B) Lorazepam (Ativan)
C) Gabapentin (Neurontin)
D) Phenytoin (Dilantin)
E) Valproic acid (Depakene)

134. A 50-year-old female with significant findings of rheumatoid arthritis presents for a preoperative evaluation for planned replacement of the metacarpophalangeal joints of her right hand under general anesthesia. She generally enjoys good health and has had ongoing medical care for her illness.

Of the following, which one would be most important for preoperative assessment of this patient's surgical risk?

A) Resting pulse rate
B) Resting oxygen saturation
C) Erythrocyte sedimentation rate
D) Rheumatoid factor titer
E) Cervical spine imaging

135. A 38-year-old female presents to the emergency department with an acute onset of fever, chills, and rapidly progressive right lower extremity redness. She reports being in her usual state of health until a few hours ago when she developed shaking chills and noted a fever of 103.0°F (39.4°C).

Shortly after she arrives she complains of right lower extremity pain and a bright red skin discoloration from her ankle to her right knee. She is also noted to have a heart rate of 123 beats/min and a WBC count of 22,000/mm^3 (N 4300–10,800). Her past medical history is significant for congenital arthritis, a recent bilateral hip replacement, and recurrent lower extremity cellulitis.

You admit the patient to the hospital. When selecting an empiric treatment for this patient, which one of the following organisms should you be most concerned about?

A) Candida albicans
B) Chlamydia trachomatis
C) Mycoplasma hominis
D) Group A Streptococcus
E) Trichophyton rubrum

136. Which one of the following screening practices is recommended for the adolescent population by the U.S. Preventive Services Task Force?

A) Lipid screening
B) Scoliosis screening
C) Testicular examination
D) Papanicolaou tests starting 3 years after first sexual intercourse
E) Chlamydia screening in sexually active females

137. A 75-year-old female presents with a complaint of paresthesias in her feet. On examination she has mild erythema of her tongue and decreased vibratory sensation in her feet. A CBC reveals a hemoglobin level of 11.1 g/dL (N 12.0–16.0) and a mean corpuscular volume of 105 μm^3 (N 78–102).

The patient takes the following over-the-counter drugs: aspirin, 81 mg/day; ranitidine (Zantac), 150 mg twice daily; and acetaminophen, 325 mg twice daily. Which one of the following prescription medications the patient takes is most likely causing her problem?

A) Hydrochlorothiazide
B) Lisinopril (Prinivil, Zestril)
C) Amlodipine (Norvasc)
D) Simvastatin (Zocor)
E) Omeprazole (Prilosec)

138. A 52-year-old female with a history of well-controlled diabetes mellitus presents with right shoulder pain for 2 months. She cannot recall any injury. The pain is fairly constant, has a burning quality, and disturbs her sleep.

On examination the patient has no redness or swelling. Passive and active abduction are limited to 45°. There is some limitation of shoulder flexion and internal rotation, but it is less pronounced. No focal tenderness is found. Plain films are negative.

Which one of the following is the most likely diagnosis for this patient?

A) Calcific tendinitis
B) Diabetic neuropathy
C) Partial rotator cuff tear
D) Locked posterior dislocation
E) Frozen shoulder

139. A 25-year-old male presents to your office after recently being diagnosed with HIV infection at the health department. You obtain blood work and note that his CD4+ count is 180 cells/mm^3.

This patient should receive prophylaxis against which one of the following opportunistic infections?

A) Histoplasma capsulatum
B) Microsporidiosis
C) Mycobacterium avium-intracellulare complex
D) Pneumocystis
E) Toxoplasma gondii

140. A 7-year-old female is brought to your office with a complaint of right hip pain and a limp with an insidious onset. There is no history of injury or repetitive use. Her vital signs are within normal limits and she has no history of fever or chills or other systemic symptoms. On examination you note that she cannot fully abduct her hip and she winces with pain on internal rotation. A FABER test is normal. Her right leg is 2 cm (¾ in) shorter than the left. Plain films reveal flattening and sclerosis of the proximal femur with joint space widening.

What is the most likely diagnosis in this patient?

A) Iliopsoas bursitis
B) Labral tear
C) Legg-Calvé-Perthes disease
D) Septic arthritis
E) Stress fracture

141. A 23-year-old female presents with menstrual irregularity, increased facial hair, and acne. Your evaluation leads to a diagnosis of polycystic ovary syndrome.

Which one of the following is the first-line management for her constellation of symptoms?

A) Clomiphene (Clomid)
B) Hormonal contraceptives
C) Metformin (Glucophage)
D) Pioglitazone (Actos)
E) Spironolactone (Aldactone)

142. A 47-year-old male is hospitalized for severe lower-extremity methicillin-resistant Staphylococcus aureus (MRSA) cellulitis. He is started on intravenous vancomycin and his home medications, which include metoprolol and escitalopram (Lexapro), are continued. On day 3, in preparation for discharge, he is transitioned to oral trimethoprim/sulfamethoxazole (Bactrim). Two hours after taking his first dose he reports severe swelling of his lips, wheezing, hoarseness, and hives. His blood pressure, which was previously normal, is now 84/62 mm Hg. You order emergent therapy with intramuscular epinephrine, 0.3 mg; intravenous methylprednisolone sodium succinate (Solu-Medrol), 125 mg; and intravenous diphenhydramine (Benadryl), 50 mg. However, no clinical improvement is noted after 15 minutes.

Which one of the following should you recommend now?

A) Another dose of intramuscular epinephrine
B) Another dose of intravenous methylprednisolone
C) Another dose of intravenous diphenhydramine
D) Intramuscular glucagon
E) Intramuscular betamethasone sodium phosphate/betamethasone acetate (Celestone Soluspan)

143. In a woman whose group B Streptococcus status is unknown, which one of the following is a risk factor requiring empiric intrapartum antibiotic prophylaxis against early-onset group B streptococcal infection in her newborn?

A) Fetal tachycardia
B) Delivery at less than 35 weeks gestation
C) Rupture of the membranes 12 hours before delivery
D) Gestational diabetes during the pregnancy
E) Use of vacuum extraction during delivery

144. A patient with advanced dementia is bed-bound and requires total assistance with all activities of daily living. She was treated recently for pneumonia, which has raised concerns that she is aspirating. Her oral intake has decreased and is not adequate for the patient's nutritional requirements. She does not have an advance directive. You schedule a family conference.

Which one of the following is your recommended approach to this problem?

A) Clear liquids
B) Intravenous fluids
C) Hand feeding
D) Percutaneous endoscopic gastrostomy (PEG) tube feeding
E) Nasogastric tube feeding

145. The National Weight Control Registry includes individuals who have lost substantial weight without surgery, and have maintained the weight loss for an average of 5 years. Which one of the following behaviors is typical of these individuals?

A) Eating breakfast every day
B) Taking daily vitamin and mineral supplements
C) Weighing themselves daily
D) Being physically active >2 hours a day
E) Eating a low-protein diet

146. A 30-year-old male presents to the emergency department after spraining his ankle while playing basketball. He has pain over the lateral malleolus.

Radiographs of the ankle would be indicated if he has which one of the following?

A) An inversion injury
B) Swelling over the lateral malleolus
C) Ecchymosis over the lateral malleolus
D) The inability to bear weight to walk since the injury
E) A previous history of ankle injury

147. During a preparticipation examination of a 5-year-old male for summer soccer camp, his mother states that he frequently awakens during the night with complaints of cramping pain in both legs, and that he seems to experience this after a day of heavy physical activity. She says that she has never noticed a definite limp. A physical examination of the hips, knees, ankles, and leg musculature is entirely normal.

Which one of the following would be the most appropriate next step in the evaluation and management of this patient?

A) Reassurance, with no activity restrictions or treatment
B) Recommending that he not participate in running sports
C) Plain films of both hips and knees
D) Serum electrolyte levels
E) Referral to a pediatric orthopedist

148. A 28-year-old previously healthy male nonsmoker has a 3-day history of fever and a productive cough. He presents to the urgent care clinic for evaluation after developing pain in the right lower chest when breathing deeply. He has not sought medical care for over 5 years and has never been immunized for influenza.

On examination you note a temperature of 38.6°C (101.4°F), a blood pressure of 136/74 mm Hg, a pulse rate of 90 beats/min, an oxygen saturation of 93% on room air, and a respiratory rate of 20/min. The patient appears uncomfortable but is not in significant distress. The presence of crackles over the right lower anterior chest prompts an order for chest radiography, which reveals an air bronchogram and a patchy alveolar infiltrate involving the medial middle lobe.

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

A) Outpatient treatment with oral azithromycin (Zithromax)
B) Outpatient treatment with oral ciprofloxacin (Cipro)
C) Outpatient treatment with oseltamivir (Tamiflu)
D) Inpatient treatment with intravenous ceftriaxone (Rocephin) and oral azithromycin
E) Inpatient treatment with intravenous ceftriaxone and ciprofloxacin

149. A 32-year-old male presents with a 1-year history of increasing fatigue, polyuria, and a gradual 30-lb weight loss. Serum chemistries reveal a bicarbonate level of 23 mEq/L (N 22–28), a corrected anion gap of 8 mEq/L (N 3–11), and a glucose level of 658 mg/dL (N 60–110). The patient is admitted to the hospital and his serum glucose drops to 174 mg/dL after he is given 2 L of intravenous normal saline and 10 units of regular insulin subcutaneously. He is observed overnight and further laboratory testing is done the next morning.

Which one of the following is more consistent with type 2 diabetes mellitus than with type 1 diabetes mellitus?

A) The patient's history of weight loss
B) The patient's response to the initial dose of insulin
C) The time course of symptom onset
D) Morning laboratory studies showing a C-peptide level of <1.1 ng/mL (N 1.1–4.4)

150. A 66-year-old male with known GOLD stage 3 COPD is admitted to the hospital with pneumonia. His pneumonia improves and he is discharged with home oxygen because of hypoxemia. He did not require home oxygen before this.

Which one of the following would be most appropriate regarding his future use of home oxygen?

A) Reduce oxygen use to nighttime only
B) Stop oxygen when his course of antibiotics and corticosteroids is completed
C) Reassess the need for oxygen within 3 months
D) Stop oxygen within 6 months
E) Continue oxygen indefinitely

151. In the hospital setting, the use of atypical antipsychotics is most appropriate for which one of the following conditions?

A) Hospital-associated insomnia
B) ICU-associated delirium
C) Resistance to care in a patient with dementia
D) Aggression in a patient with dementia

152. A 70-year-old female presents with a blotchy red rash on both of her legs and feet. The rash started 2 days ago and is associated with fatigue. Her past medical history is unremarkable except for acute cystitis treated with a 3-day course of an antibiotic last week. On examination her vital signs are normal, as is the remainder of her physical examination, with the exception of a palpable purpuric rash on her lower extremities, shown below. The patient's CBC, INR, and partial thromboplastin time are all normal.

Which one of the following is now indicated?

A) Supportive care only
B) Antihistamines
C) Broad-spectrum antibiotics
D) Plasmapheresis
E) Platelet transfusion

153. A 65-year-old male comes to your office to establish care after hospitalization for an acute myocardial infarction. While reviewing his hospital record you see that he has normal renal function and had an echocardiogram showing a left ventricular ejection fraction of 40%. His current medications include metoprolol succinate (Toprol-XL), lisinopril (Prinivil, Zestril), atorvastatin (Lipitor), and aspirin. In your office today his blood pressure is 132/84 mm Hg and he is still feeling somewhat weak. He has 1+ pitting edema in his legs and mild dyspnea with exertion.

Which one of the following, when added to his current regimen, has evidence to support its use in preventing all-cause mortality?

A) Chlorthalidone
B) Spironolactone (Aldactone)
C) Ezetimibe (Zetia)
D) Losartan (Cozaar)
E) Fish oil

154. A 44-year-old African-American female reports diffuse aching, especially in her upper legs and shoulders. The aching has increased, and she now has trouble going up and down stairs because of weakness. She has no visual symptoms, and a neurologic examination is normal except for proximal muscle weakness. Laboratory tests reveal elevated levels of serum creatine kinase and aldolase. Her symptoms improve significantly when she is treated with corticosteroids.

Which one of the following is the most likely diagnosis?

A) Duchenne's muscular dystrophy
B) Myasthenia gravis
C) Amyotrophic lateral sclerosis
D) Aseptic necrosis of the femoral head
E) Polymyositis

155. A 24-year-old gravida 4 para 2 with mild chronic hypertension and an uncomplicated pregnancy has just delivered a vigorous male by spontaneous vaginal delivery. She is noted to have heavy vaginal bleeding and a bimanual examination reveals a soft, poorly contracted uterus. Her temperature is 37.1°C (98.8°F), blood pressure 158/92 mm Hg, pulse rate 105 beats/min, and oxygen saturation 95% on room air.

Which one of the following uterotonic agents is CONTRAINDICATED in the management of this patient's postpartum hemorrhage?

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

156. A 30-year-old female presents to your office as a new patient and requests a refill of sulfasalazine (Azulfidine) tablets for maintaining remission of her ulcerative colitis. The initial presentation of her disease was in her teenage years and involved inflammation of the entire colon. She was then started on sulfasalazine, which has worked well for controlling her symptoms. She had one flare when she ran out of medicine 7 years ago. She has not seen a gastroenterologist for many years.

Which one of the following is an appropriate management plan for this patient?

A) Refill her sulfasalazine and continue usual care unless symptoms recur
B) Attempt to gradually discontinue the sulfasalazine
C) Stop sulfasalazine and start azathioprine (Imuran)
D) Continue sulfasalazine and arrange for colonoscopy to screen for colon cancer
E) Refer to a colorectal surgeon to discuss colectomy

157. Tramadol (Ultram) should be avoided in patients with a history of which one of the following?

A) Seizures
B) Heart failure
C) Ventricular dysrhythmias
D) Hypertension

158. You see a 58-year-old female whom you suspect has COPD and you recommend formal testing in order to confirm this diagnosis. The cutoff most often used for COPD diagnosis on a spirometry test performed while the patient is stable (not experiencing an acute exacerbation of symptoms) is a postbronchodilator FEV_1/FVC ratio

A) $<50\%$ of predicted
B) $<70\%$ of predicted
C) $<85\%$ of predicted
D) $>70\%$ of predicted
E) $>85\%$ of predicted

159. For patients on lithium monotherapy for bipolar disease, monitoring should include periodic blood levels of lithium, creatinine, and

A) calcium
B) hemoglobin A_{1c}
C) lipids
D) testosterone
E) TSH

160. A 28-year-old healthy female calls your clinic with a 2-day history of dysuria, urgency, and frequency. She has not had a fever, back pain, nausea, or hematuria, and has not noticed any vaginal discharge or itching. She was seen for similar symptoms 3 months ago and was treated with a 3-day course of antibiotics, with full resolution of symptoms.

Treatment for this patient should be based on

A) her reported symptoms
B) the presence or absence of suprapubic tenderness on examination
C) the presence or absence of leukocyte esterase on a urine dipstick
D) findings from a mid-stream urine culture
E) findings from urine microscopy

161. A 44-year-old female with a history of type 2 diabetes mellitus that is well controlled with metformin (Glucophage) is noted to have mild anterior neck fullness during an annual physical examination. A review of systems is unremarkable. Ultrasonography of the neck shows a normal-sized thyroid gland with a 1.2-cm nodule in the right lobe. Her TSH level is normal.

Which one of the following is the most appropriate next step in the management of this patient's thyroid nodule?

A) A repeat TSH level in 3 months
B) A radionuclide uptake thyroid scan
C) Noncontrast CT of the neck
D) Fine-needle aspiration of the nodule
E) No further workup

162. A 17-year-old female with a history of morbid obesity sees you to discuss contraceptive options. She is heterosexual and is currently sexually active with one male partner. She has heavy irregular periods and associated anemia and is interested in a contraceptive option that will both provide reliable birth control and decrease her menstrual blood loss. She recently had negative tests for HIV, gonorrhea, and Chlamydia at a local health department. Her examination is unremarkable except for a weight of 136 kg (300 lb) and a BMI of 50 kg/m^2.

Which one of the following would be the best option for contraception for this patient?

A) A diaphragm with spermicide
B) The norelgestromin/ethinyl estradiol transdermal system (Ortho Evra)
C) The levonorgestrel-releasing intrauterine system (Mirena IUD)
D) Medroxyprogesterone acetate (Depo-Provera)

163. A 35-year-old otherwise healthy male who is not on any medications presents to your office complaining of 3–4 episodes of watery diarrhea beginning 2 days earlier. The diarrhea is accompanied by some nausea and abdominal cramping. He denies fever, dehydration, and bloody stool.

Which one of the following is indicated at this time?

A) Testing for fecal leukocytes
B) A stool culture
C) A stool examination for ova and parasites
D) A stool test for Clostridium difficile toxin
E) No testing

164. A 60-year-old male is scheduled for coronary revascularization. Which one of the following would reduce his cardiovascular risk the most when given perioperatively?

A) β-Blockers
B) Calcium channel blockers
C) Statins
D) Aspirin
E) Warfarin (Coumadin)

165. A 72-year-old white male requests treatment for moderate osteoarthritis pain of the hips and knees. He has not been treated for this problem previously and has been reluctant to take medication. He takes lisinopril (Prinivil, Zestril), 20 mg daily, for hypertension, and his blood pressure is under good control. He also has a known history of stage 3 kidney disease, with a serum creatinine level of 2.1 mg/dL (N 0.6–1.5) and a glomerular filtration rate of 36 mL/min/1.73 m^2. The patient's renal function has been stable for the last 6 months. His CBC and chemistry panel are otherwise normal.

Which one of the following is the initial treatment of choice for this patient?

A) Acetaminophen
B) Celecoxib (Celebrex)
C) Oxycodone (OxyContin)
D) Sulindac (Clinoril)
E) Tramadol (Ultram)

166. An anxious 30-year-old white female comes to the emergency department with shortness of breath, circumoral paresthesia, and carpopedal spasms. Which one of the following sets of blood gas values is most consistent with this clinical picture?

A) pH 7.25 (N 7.35–7.45), pCO_2 25 mm Hg (N 35–45), pO_2 100 mm Hg (N 80–100)
B) pH 7.25, pCO_2 50 mm Hg, pO_2 80 mm Hg
C) pH 7.50, pCO_2 25 mm Hg, pO_2 100 mm Hg
D) pH 7.55, pCO_2 50 mm Hg, pO_2 80 mm Hg

167. A 30-year-old otherwise healthy female has concerns about her menses and fertility. Her last menstrual period was 8 months ago when she stopped taking oral contraceptive pills (OCPs). In her teens and early twenties she had irregular, sporadic periods. Four years ago she developed menometrorrhagia and resultant iron deficiency anemia; this was corrected with the use of OCPs. She is now interested in becoming pregnant. Her physical examination, including a gynecologic examination, is normal. A urine pregnancy test is negative and her TSH level is in the normal range.

Which one of the following is the most appropriate next step?

A) A CBC and metabolic panel
B) Serum LH and FSH levels
C) Karyotype analysis
D) Pelvic ultrasonography

168. In frail elderly patients, starvation can be distinguished from cachexia by which one of the following?

A) An inflammatory response seen in starvation
B) A normal appetite in the early stages of cachexia
C) A rapid decrease in albumin in the early stages of starvation
D) A reversal of changes with refeeding in starvation

169. A 2-year-old female is brought in by her father for evaluation of a cough. Her cough started 10 days ago along with a runny nose and a low-grade fever. The runny nose and fever are no longer present but a dry-sounding cough persists.

On examination the patient appears well and has a normal heart rate and respiratory rate. You note no retractions and lung sounds are also normal.

Which one of the following would be an appropriate management option?

A) Buckwheat honey
B) Albuterol (Proventil, Ventolin)
C) Azithromycin (Zithromax)
D) Dextromethorphan
E) Diphenhydramine (Benadryl)

170. A mother brings her 6-year-old son to your office for evaluation because she found a lump in his neck below the jaw on the right side. She first noted it a week ago, about a week after he had recovered from an upper respiratory infection. She reports that her son feels well and is back to full, unrestricted activity.

When you examine the child you find an enlarged lymph node in the right anterior cervical chain of nodes. It measures 2 cm in diameter and is somewhat firm, mobile, and nontender. The remainder of the examination is normal.

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

A) Ultrasound evaluation of the lymph node
B) A fine-needle biopsy of the node
C) An excisional biopsy of the node
D) A 10-day course of antibiotics
E) Follow-up examination in 1 month

171. A 50-year-old female with no medical problems presents with a 2-day history of profuse bloody diarrhea, severe abdominal cramping, and fever. She has recently returned from a week-long trip to Thailand. Her stool culture is positive for Campylobacter.

Which one of the following is the treatment of choice?

A) Amoxicillin
B) Azithromycin (Zithromax)
C) Ciprofloxacin (Cipro)
D) Metronidazole (Flagyl)
E) Rifaximin (Xifaxan)

172. Which one of the following NSAIDs is safest for patients with a previous history of myocardial infarction?

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

173. A 21-year-old sexually active female comes to your office for a Papanicolaou (Pap) test and STD screening. Her Pap smear is normal but she tests positive for gonorrhea. Chlamydia testing is negative.

Which one of the following is the recommended treatment?

A) Doxycycline
B) Azithromycin (Zithromax)
C) Ceftriaxone (Rocephin) plus azithromycin
D) Ofloxacin
E) Cefdinir plus levofloxacin (Levaquin)

174. A 6-month-old male is seen in the clinic for a cough, fever, and decreased feeding for the past 2 days. He has no medical problems and no known drug allergies, and has not had nausea or vomiting. On examination he is fussy but consolable and his mucous membranes are moist. His temperature is 38.8°C (101.8°F), pulse rate 92 beats/min, respirations 56/min, oxygen saturation 96% on room air, and blood pressure 90/50 mm Hg. He has mild intercostal retractions and crackles are heard at the right lung base. His heartbeat is regular without murmurs. Capillary refill is normal.

Which one of the following is the best initial treatment for this child?

A) High-dose oral amoxicillin
B) Oral azithromycin (Zithromax)
C) Ceftriaxone (Rocephin) intravenously or intramuscularly every 24 hours
D) Trimethoprim/sulfamethoxazole (Bactrim)
E) Erythromycin

175. An 18-month-old white female is brought to your office by her father, who states that 8 days ago the child developed a temperature of 100.0°F with a mild sore throat, a runny nose, and loss of her voice. She is still symptomatic and the father is concerned about the longevity of this illness and requests antibiotic therapy.

On examination the patient is afebrile with normal tympanic membranes, moderate mucopurulent posterior pharyngeal drainage, and a normal cardiopulmonary examination. She appears alert and active in the office, with no signs of acute distress.

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

A) Reassurance and supportive care
B) Diphenhydramine (Benadryl)
C) Amoxicillin
D) Azithromycin (Zithromax)
E) Cefdinir

176. A 61-year-old female presents to your office with a sudden painless loss of vision in her right eye. Her past medical history includes both hypertension and type 2 diabetes mellitus.

Which one of the following would make you suspect retinal vein occlusion as the cause of her sudden visual loss?

A) An afferent pupillary defect in the contralateral eye
B) Right eye redness
C) Tortuous retinal veins on funduscopic examination
D) Macular drusen on funduscopic examination

177. A 20-year-old African-American female asks if you can help eradicate an unsightly hypertrophic growth of skin that has developed in an area where she had a mole removed. She reports that this tissue has grown to become at least three times larger than the original lesion and that it is darkly pigmented, firm, and pruritic. On examination you note a firm, smooth, shiny, raised 1×4-cm plaque on the patient's chest that is darker than the surrounding skin.

Which one of the following is first-line therapy for this lesion?

A) Silicone gel sheeting
B) Topical imiquimod (Aldara)
C) Intralesional corticosteroid injection
D) Surgical excision
E) Laser destruction

178. A 74-year-old female presents to the emergency department in respiratory distress with a slightly altered mental status. Her urine drug screen is positive for opioids. The patient and her family deny opioid use. You know this patient well and also doubt she is taking opioids. She has been taking dextromethorphan, guaifenesin, azithromycin (Zithromax), and pseudoephedrine.

Which one of these could be causing a false-positive test for opioids on her urine drug screen?

A) Dextromethorphan
B) Guaifenesin
C) Azithromycin
D) Pseudoephedrine

179. A 12-year-old white male who lives in a household with several cats presents with axillary lymphadenopathy. Which one of the following is the best initial test for establishing a diagnosis of cat-scratch disease?

A) Lymph node biopsy
B) Blood cultures
C) IgG testing for Bartonella henselae
D) IgG testing for nontuberculous Mycobacterium species

180. A 49-year-old unemployed African-American male has multiple chronic conditions, including type 2 diabetes mellitus, chronic kidney disease, hypertension, obstructive sleep apnea, and lower extremity edema. He is on several medications, which he reports taking sporadically due to a lack of health insurance and a limited income. He has several abnormal laboratory values, including a serum creatinine level of 3.1 mg/dL, an increase from his usual levels, which have ranged from 1.2–1.6 mg/dL over the past 5 years. You calculate his glomerular filtration rate to be 27 mL/min/1.73 m^2.

Which one of the following medications that he takes should be stopped at this time?

A) Amlodipine (Norvasc)
B) Aspirin
C) Insulin
D) Metformin (Glucophage)
E) Metoprolol (Lopressor, Toprol-XL)

181. A 69-year-old patient presents with a 2-day history of wrist pain after sustaining a fall at home. On examination there is diffuse swelling and tenderness across the dorsal aspect of the wrist. Radiographs are shown below.

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

A) A long arm posterior splint
B) A radial gutter splint
C) A sugar-tong splint
D) A thumb spica splint
E) An ulnar gutter splint

182. Which one of the following has been shown to be LEAST effective in the treatment of irritable bowel syndrome?

A) Fiber
B) Probiotics
C) Antispasmodics
D) Antidepressants

183. A 23-year-old female complains of lower abdominal and pelvic pain, increased vaginal discharge, and postcoital bleeding. Her pain worsens during intercourse, and is accompanied by occasional nausea and vomiting and a feverish feeling. She is sexually active with several male partners.

A physical examination is remarkable for an oral temperature of 38.6°C (101.5°F), cervical motion tenderness, adnexal tenderness without a mass, and a prominent cervical discharge. Office laboratory results include an elevated erythrocyte sedimentation rate and an elevated WBC count. Saline microscopy of vaginal secretions shows abundant numbers of WBCs but is negative for Trichomonas vaginalis and bacterial vaginosis. You order nucleic-acid amplification tests for Chlamydia trachomatis and Neisseria gonorrhoeae.

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

A) Treatment based on clinical findings
B) Treatment when results of testing for Chlamydia trachomatis and Neisseria gonorrhoeae are available
C) Transvaginal ultrasonography
D) Pelvic CT
E) Laparoscopy

184. Which one of the following is associated with the use of stimulant medications for attention-deficit disorder in adults?

A) Lower success rates compared to nonstimulant medications
B) Weight gain
C) A low risk of medication abuse
D) Serious adverse cardiovascular events
E) Increases in blood pressure

185. A 70-year-old male with a past medical history significant for long-standing diabetes mellitus and hypertension presents with a stroke. CT of the head shows mild atrophy, with no acute bleeding.

In the first 24 hours after his stroke, starting treatment to control his blood pressure is recommended if it reaches what threshold level?

A) 150/90 mm Hg
B) 160/100 mm Hg
C) 180/100 mm Hg
D) 200/110 mm Hg
E) 220/120 mm Hg

186. The preferred site for an emergency airway is

A) the thyrohyoid membrane
B) the cricothyroid membrane
C) immediately below the cricoid cartilage
D) through the first and second tracheal rings
E) at the level of the thyroid isthmus

187. An otherwise healthy 55-year-old female is diagnosed with hypertension, based on multiple measurements of systolic blood pressures ranging from 142 to 148 mm Hg and diastolic blood pressures in the range of 90–96 mm Hg over the past 4 months. You are now discussing medication options. The patient exercises regularly and conscientiously adheres to a very healthy diet, and has a BMI of 20 kg/m^2. She is concerned with the potential long-term adverse side effects of medication in general, and asks if any agents have potential advantages.

Which one of the following medications has been shown to reduce bone loss and may reduce her risk of future hip fractures?

A) Amlodipine (Norvasc)
B) Hydrochlorothiazide
C) Lisinopril (Prinivil, Zestril)
D) Losartan (Cozaar)
E) Metoprolol (Lopressor, Toprol-XL)

188. A 3-year-old male is carried into the office by his mother. Yesterday evening he began complaining of pain around his right hip. Today he has a temperature of 37.6°C (99.7°F), cries when bearing weight on his right leg, and will not allow the leg to be moved in any direction. A radiograph of the hip is normal.

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

A) A CBC and an erythrocyte sedimentation rate
B) A serum antinuclear antibody level
C) Ultrasonography of the hip
D) MRI of the hip
E) In-office aspiration of the hip

189. Plan-Do-Check-Act (PDCA) describes which one of the following?

A) The accreditation process to become a patient-centered medical home
B) One of the National Quality Forum's Safe Practices for Better Healthcare
C) The cycle of continuous quality improvement
D) Donabedian categories of quality measurement
E) The Chronic Care Model

190. A 44-year-old female presents with a 2-week history of postprandial right upper abdominal pain. Since yesterday her pain has worsened in intensity and she has been vomiting. The patient does not use tobacco or drink alcohol, and takes no medications. Laboratory findings include a serum lipase level of 105 IU/L (N 14–51), a serum amylase level of 155 U/L (N 36–128), a serum total bilirubin level of 1.5 mg/dL (N 0.0–1.0) and an alkaline phosphatase level of 200 IU/L (N 33–96).

The recommended initial imaging in this situation is

A) no routine imaging unless the clinical course becomes complicated
B) transabdominal ultrasonography
C) contrast-enhanced CT
D) magnetic resonance cholangiopancreatography (MRCP)
E) MRI

191. Which one of the following does the American College of Obstetricians and Gynecologists recommend as first-line treatment for nausea and vomiting in pregnancy?

A) Doxylamine (Unisom) and pyridoxine (vitamin B_6)
B) Ondansetron (Zofran)
C) Prochlorperazine
D) Promethazine (Phenergan)
E) Metoclopramide (Reglan)

192. A 69-year-old female is unable to obtain adequate calcium from dietary sources. She is on long-term therapy with pantoprazole (Protonix) for peptic ulcer disease.

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

A) Oyster shell calcium
B) Calcium carbonate
C) Calcium lactate
D) Calcium gluconate
E) Calcium citrate

193. A 55-year-old male is brought to the emergency department because of confusion and seizures. He has a history of hypertension and obstructive sleep apnea due to obesity. He is unconscious on arrival and no other history is available. An examination shows no focal neurologic findings, but a general examination is limited because of his size. Breath sounds are diminished, and heart sounds are difficult to hear. He has venous insufficiency changes on his lower extremities, with brawny-type edema. Vital signs include a pulse rate of 90 beats/min, a blood pressure of 140/90 mm Hg, and an oxygen saturation of 96%.

Laboratory testing reveals a glucose level of 120 mg/dL and a sodium level of 110 mEq/L (N 135–145), with normal renal function tests and liver enzyme levels. A chest radiograph shows mild cardiomegaly.

Which one of the following is the treatment of choice for this patient?

A) Valsartan (Diovan)
B) Furosemide
C) Vasopressin (Pitressin)
D) Hypertonic saline
E) Conivaptan (Vaprisol)

194. A 58-year-old female consults you about smoking cessation. She has been intolerant of varenicline (Chantix) but tells you her sister was able to stop smoking with the use of bupropion (Wellbutrin).

A history of which one of the following would be a relative contraindication to the use of bupropion?

A) Coronary artery disease
B) Depression
C) Eczema
D) Hypothyroidism
E) Seizures

195. The leading type of injury in adults age 65 and older is

A) automobile accidents
B) falls
C) gunshot wounds
D) fire-related injuries
E) hypothermia

196. A 69-year-old female with coronary artery disease, diabetes mellitus, and chronic asthma presents to your office for follow-up. During the visit she expresses concerns about recent reports of unsafe air quality in your region.

Which one of the following is reasonable counseling regarding the health risks of ambient air pollution for this patient?

A) Ambient air pollution has not been clearly shown to increase complications of her chronic diseases
B) She should take her normal vigorous daily walk outside despite air quality alerts because the health benefits of exercise outweigh the risks
C) She should avoid areas near busy roads, which are major sources of multiple outdoor air pollutants
D) Use of air conditioning will likely make her indoor air quality worse
E) Ozone pollution usually peaks in the winter months

197. A 45-year-old male who is being treated for chronic alcohol dependence with monthly injections of naltrexone (Vivitrol) presents with significant pain due to a fractured ankle, and intravenous pain medication is required. Which one of the following medications would be most useful in this situation?

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

198. A 56-year-old female with a history of poorly controlled type 2 diabetes mellitus presents with a complaint of progressive loss of sensation and weakness in both legs over the past 2 days and low back pain that is nonradiating. She also reports that she is unable to feel bowel movements or urination. She says she has not had any fever or chills.

On examination she has a low-grade fever with a blood pressure of 142/84 mm Hg. She has no sensation to pinprick or vibration from the T9 level down, bilaterally. She is unable to move her legs voluntarily or resist gravity, and no reflexes are elicited in the lower extremities. Her WBC count is 12,700/mm^3 (N 4000–10,000) and her erythrocyte sedimentation rate is 127 mm/hr (N 1–25).

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

A) Antiplatelet therapy
B) Intravenous corticosteroids
C) Thoracic spine films
D) MRI of the thoracic spine

199. A 60-year-old white female is admitted to the hospital with a submassive pulmonary embolism. Which one of the following is most effective for assessing right ventricular dysfunction in this situation?

A) Echocardiography
B) Physical examination
C) 12-Lead electrocardiography
D) Contrast-enhanced CT of the chest

200. You are caring for a 42-year-old female with symptoms and physical findings consistent with chronic fatigue syndrome. Her CBC, metabolic panel, TSH level, C-reactive protein level, rheumatoid factor test, antinuclear antibody test, and phosphorus level are all normal. You have assessed her for comorbid diagnoses of chronic pain, depression, and sleep disturbance, which are all negative.

The best evidence-based initial treatment would be

A) hydrocortisone
B) methylphenidate (Ritalin)
C) melatonin
D) cognitive-behavioral therapy
E) white fluorescent light therapy

201. A 38-year-old female presents with an itchy rash she says has been present for the past several months. She has been using over-the-counter hydrocortisone cream with no improvement. On examination she has an oval 12-cm erythematous plaque on her buttocks. The plaque is covered with silvery scales.

Which one of the following would be the best initial treatment for her rash?

A) Clobetasol 0.05% cream (Temovate) applied twice daily
B) Clotrimazole 1% cream applied twice daily
C) Diclofenac 3% gel applied twice daily
D) Mupirocin 2% ointment (Bactroban) applied twice daily
E) Salicylic acid 2% gel applied twice daily

202. A 66-year-old male sees you for follow-up after a recent hospitalization for his second episode of diverticulitis in the past 3 years. He is currently in excellent health and takes no daily medications except for occasional acetaminophen for arthritis pain. His physical examination is unremarkable except for a BMI of 19.0 kg/m^2. He asks you about preventing further recurrences of his diverticulitis.

You suggest that he do which one of the following?

A) Lose weight
B) Increase his dietary fiber intake
C) Stop acetaminophen use
D) Avoid eating nuts, corn, or popcorn
E) Avoid high-impact aerobic exercise

203. A 23-year-old male presents to your office with a 2-day history of dull, achy, right testicular pain. He reports that the pain began gradually, reaching a peak last night. He does not recall any trauma and denies any urethral complaints.

Your examination reveals an extremely tender right testis with some tenderness extending to the epididymis. A preliminary report from a stat ultrasound examination shows an enlarged, heterogeneous right testis with increased color flow.

Which one of the following is the preferred management?

A) Watchful waiting
B) Repeat ultrasonography in 24 hours
C) Antibiotic treatment
D) Emergent urology referral

204. A 21-year-old male college student presents to the emergency department with a 2-day history of fever, severe muscle and joint pain, nausea, and vomiting. He spent his winter break traveling in South America and returned 4 days ago. On examination he has a temperature of 39.4°C (103.0°F), gingival bleeding, lower extremity non-pitting edema, right upper quadrant tenderness, a diffuse maculopapular rash, muscle tenderness, and petechiae on his extremities.

WBCs	3100/mm^3 (N 4300–10,800)
Neutrophils	40% (N 45–75)
Lymphocytes	50% (N 16–46)
Bands	1% (N 0–5)
Hematocrit	50.0% (N 37.0–49.0)
Platelets	75,000/mm^3 (N 150,000–350,000)
Thick and thin blood smear	negative
AST (SGOT)	100 U/L (N 10–40)
ALT (SGPT)	120 U/L (N 7–30)
Total bilirubin	1.0 mg/dL (N 0.0–1.0)
Albumin	3.5 g/dL (N 3.1–4.3)
Creatine phosphokinase	500 U/L (N 60–400)

Which one of the following is the most likely diagnosis?

A) Hepatitis A
B) Yellow fever
C) Dengue fever
D) Typhoid fever
E) Influenza

205. A 25-year-old female with asthma uses her albuterol (Proventil, Ventolin) inhaler only before running, but reports waking up short of breath four times per month. She went to the emergency department recently for increased dyspnea during peak ragweed season and remained overnight until her symptoms improved.

Which one of the following is the best treatment option now?

A) Oral prednisone as needed
B) Inhaled albuterol daily
C) Inhaled cromolyn sodium daily
D) Inhaled salmeterol (Serevent Diskus) daily
E) Inhaled fluticasone (Flovent) daily

206. Stretching has NO demonstrable benefit for which one of the following?

A) Hamstring strain
B) Chronic neck pain
C) Joint contracture
D) Osteoarthritis
E) Rehabilitation post knee replacement

207. A 3-week-old male is brought to your office because of a fever and increasing fussiness. He had a rectal temperature at home earlier today of 101.5°F (38.6°C). The mother reports that he is not breastfeeding as often as usual and has had fewer wet diapers. He has no nasal congestion and no cough. There are no recent sick contacts or known exposures.

On examination you note a fever of 39.2°C (102.5°F) and a pulse rate of 200 beats/min. The remainder of his examination is normal. You order a full sepsis workup and admit him to the hospital.

Which one of the following is the best intravenous antibiotic regimen for empiric coverage at this point?

A) Ampicillin and cefotaxime (Claforan)
B) Ampicillin and clindamycin (Cleocin)
C) Ciprofloxacin (Cipro)
D) Gentamicin
E) Vancomycin

208. Which one of the following is most appropriate in the management of frostbite?

A) Complete surgical debridement of hemorrhagic blisters
B) Rapid rewarming with dry heat and warm blankets
C) Withholding analgesics to ensure accurate assessment
D) Vigorously rubbing affected tissues to restore circulation
E) Leaving simple, non-tense areas of clear blistering intact

209. A 32-year-old female comes to your office because she has had increasing difficulty performing her daily tasks for the past 6 months. She says she worries excessively about routine events every day and constantly feels tense, restless, jittery, "on edge," irritable, and unable to relax. She also reports that sometimes her heart pounds and races, her hands feel sweaty and clammy, and her mouth feels like it is "full of cotton." She reports difficulty concentrating and falling asleep at night. A recent TSH level was normal. During your examination you note frequent sighing, a fine tremor in her hands, bitten nails, and clammy hands.

Based on her symptoms and examination, which one of the following pharmacologic agents for managing her condition is supported by the best available evidence?

A) Alprazolam (Xanax)
B) Buspirone
C) Hydroxyzine
D) Escitalopram (Lexapro)
E) Quetiapine (Seroquel)

210. A 6-year-old male is brought to your office for a well child check. His vital signs are normal; he is 117 cm (46 in) tall and weighs 19 kg (42 lb). The patient has grown out of his car seat, and his mother recently was told by a friend that he can now sit in the front seat of a car. She asks you if this is true.

According to recommendations from the American Academy of Pediatrics, which one of the following is true for this patient?

A) He should be using a rear-facing child safety seat in the back seat of the car
B) He should be using a belt-positioning booster seat in the back seat of the car
C) He should be using a belt-positioning booster seat and can ride in the front or back seat of the car
D) He no longer needs a safety seat but should always ride in the back seat of the car
E) He no longer needs a safety seat and can ride in the front or back seat of the car

211. A 40-year-old male is admitted to the hospital with a generalized rash consistent with Stevens-Johnson syndrome. His previous medical problems include obesity, gout, hypertension, type 2 diabetes mellitus, and depression. His medications include lisinopril (Prinivil, Zestril), allopurinol (Zyloprim), colchicine (Colcrys), metoprolol succinate (Toprol-XL), metformin (Glucophage), and venlafaxine (Effexor XR).

Which one of these medications is most likely to be the cause of his Stevens-Johnson syndrome?

A) Allopurinol
B) Colchicine
C) Lisinopril
D) Metformin
E) Venlafaxine

212. A 72-year-old male with dyslipidemia and coronary artery disease sees you for a routine evaluation. He asks if he should take fish oil supplements.

You advise the patient that good evidence shows that supplementation with omega-3 fatty acids decreases

A) triglycerides
B) LDL-cholesterol
C) cardiovascular events
D) total mortality

213. A 76-year-old female presents with a history of bilateral shoulder pain for the past month. She reports stiffness in the morning for about 1 hour and also reports difficulty getting up when seated in a chair. Acetaminophen is ineffective for her pain. Her erythrocyte sedimentation rate is 65 mm/hr (N 1–25).

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

A) Oral dexamethasone, 8 mg twice a day
B) Oral methylprednisolone (Medrol Dosepak), taper 24 mg to 0 mg over 7 days
C) Oral prednisolone (Orapred), 60 mg daily
D) Oral prednisone, 15 mg/day
E) Intravenous methylprednisolone, 120 mg every 6 hours

214. You are caring for a 60-year-old female with Crohn's disease that is well controlled by infliximab (Remicade). As your staff updates her immunization status, which one of the following should be kept in mind?

A) Hepatitis A vaccine is contraindicated
B) Pneumococcal vaccine is contraindicated
C) Tetanus toxoid is contraindicated
D) Zoster vaccine is contraindicated
E) All routine immunizations are considered safe

215. Which one of the following is a common cause of prerenal acute kidney injury?

A) Acute tubular necrosis
B) Diuretic overuse
C) Glomerulonephritis
D) Neurogenic bladder
E) Prostate hypertrophy

216. A 2-month-old female is brought to your office with tachypnea and a staccato cough. She is afebrile. A chest radiograph shows hyperinflation and bilateral infiltrates, and a CBC reveals eosinophilia.

Which one of the following is the most likely etiologic agent?

A) Chlamydia trachomatis
B) Listeria pneumoniae
C) Streptococcus pneumoniae
D) A gram-negative bacteria
E) Respiratory syncytial virus

217. A 45-year-old male with Down syndrome is brought to your office because of complaints of increased aggression toward the staff and peers at his group home. He is usually pleasant and compliant but he has been acting out for the last 2½ weeks. He is not considered to be a danger to himself or others at this point. He is minimally verbal and unable to give a history for himself. Staff members report no change in appetite or urination, and no signs of outward illness. His vital signs in your office are within normal limits.

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

A) A complete history, physical examination, and basic laboratory tests
B) CT of the head
C) Risperidone (Risperdal)
D) Sertraline (Zoloft)
E) Valproic acid (Depakene)

218. Which one of the following tests is recommended for the detection and diagnosis of gestational diabetes mellitus?

A) Hemoglobin A_{1c}
B) Fasting blood glucose
C) 2-hour postprandial glucose
D) An oral glucose tolerance test
E) A fasting insulin/glucagon ratio

219. CT imaging for which one of the following conditions is best done without contrast?

A) Acute appendicitis
B) Diverticulitis
C) Pulmonary embolism
D) Nephrolithiasis

220. A 46-year-old perimenopausal female complains of hot flashes, which are very troubling to her. She would like treatment for these symptoms, but has a history of deep vein thrombosis while taking oral contraceptives.

Which one of the following treatments has evidence of benefit for her symptoms with the least potential for causing deep vein thrombosis?

A) Vaginal estradiol
B) Oral estradiol combined with progestin
C) Oral phytoestrogens such as soy protein
D) Oral venlafaxine (Effexor XR)
E) Topical bio-identical hormones

221. A 72-year-old white female is admitted to the hospital with her first episode of acute heart failure. She has a history of hypertension treated with a thiazide diuretic. An echocardiogram reveals no evidence of valvular disease and no segmental wall motion abnormalities. Left ventricular hypertrophy is noted, and her ejection fraction is 55%. Her pulse rate is 72 beats/min.

The most likely cause of her heart failure is

A) systolic dysfunction
B) diastolic dysfunction
C) hypertrophic cardiomyopathy
D) high-output failure

222. A 54-year-old female concert pianist presents to your office with a 9-month history of searing pain and bilateral paresthesias in the distribution of her median nerve. She says that the pain frequently radiates as far as her shoulder, and that her fingers feel swollen even though they look normal. She states that she has worsening paresthesias at night and often finds herself flicking her wrist in an attempt to alleviate her symptoms.

The patient's symptoms are reproducible with wrist flexion and she exhibits mild weakness of the abductor pollicis brevis on examination. She has been wearing neutral wrist splints at night for the last 8 weeks and has also been taking oral NSAIDs, resulting in only minimal relief. She is in the middle of her concert season and is unable to take time off for a surgical procedure.

Which one of the following therapies will provide this patient with the longest symptom relief?

A) Full rest for 8 weeks
B) Full-time cock-up splinting for 8 weeks
C) Physical therapy
D) Oral corticosteroids
E) Local corticosteroid injection

223. In a patient with chronic, severe, noncancer pain, which one of the following would be most appropriate for initial opioid therapy?

A) Buprenorphine (Buprenex)
B) Transdermal fentanyl (Duragesic)
C) Hydromorphone (Dilaudid)
D) Methadone (Dolophine)
E) Morphine

224. In which one of the following cardiac emergency cases should atropine be used?

A) Symptomatic Mobitz type II atrioventricular block
B) Cardiac arrest with pulseless electrical activity
C) Asystolic cardiac arrest
D) Acute cardiac ischemia and a heart rate < 60 beats/min
E) Sinus bradycardia with hypotension

225. Staff members in your practice often complain about one of your patients. He exhibits odd behaviors and beliefs, and is always very anxious about his visit and about when he will be seen, despite long familiarity with your practice.

Which one of the following personality disorders best fits the description of this patient?

A) Antisocial
B) Borderline
C) Dependent
D) Narcissistic
E) Schizotypal

226. A 45-year-old male who has been complaining of dyspnea undergoes pulmonary function testing. The results show an FEV_1/FVC ratio of 85% and an FVC below the lower limits of normal.

Based on these results, which one of the following possible causes of dyspnea is most likely?

A) Asthma
B) Bronchiectasis
C) α_1-Antitrypsin deficiency
D) COPD
E) Idiopathic pulmonary fibrosis

227. A 62-year-old female presents to your office with diarrhea and signs and symptoms of dehydration. She has a temperature of 38.6°C (101.5°F) and a WBC count of 17,000/mm^3 (N 5300–10,800). You admit her to the hospital, and a Clostridium difficile toxin assay is positive. Because of the severity of her infection, you initiate oral vancomycin (Vancocin), 125 mg 4 times daily. She has a poor clinical response and you decide to alter the antibiotic regimen to include intravenous coverage.

Which one of the following intravenous antibiotics would be most appropriate?

A) Ciprofloxacin (Cipro)
B) Imipenem/cilastatin (Primaxin)
C) Meropenem (Merrem)
D) Metronidazole
E) Vancomycin

228. Which one of the following is NOT a risk factor for stillbirth?

A) Smoking
B) Advanced maternal age
C) Congenital anomalies
D) Vigorous exercise
E) BMI >30 kg/m^2

229. A 72-year-old female who remains very active and engaged in the community comes to your office concerned by urinary symptoms that disrupt her life. She reports that she often has a strong, abrupt desire to void that frequently causes her to leak urine involuntarily. She also reports occasional episodes of urinary frequency and nocturia.

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

A) Anticholinergic drugs such as oxybutynin or solifenacin (Vesicare)
B) β-Adrenergic agonists such as mirabegron (Myrbetriq)
C) Duloxetine (Cymbalta)
D) Bladder training
E) A pessary

230. A 13-year-old male presents with a 3-week history of left lower thigh and knee pain. There is no history of a specific injury, and his past medical history is negative. He has had no fevers, night sweats, or weight loss, and the pain does not awaken him at night. He tried out for his school's basketball team but had to quit because of the pain, which was worse when he tried to run.

Which one of the following physical examination findings would be pathognomonic for slipped capital femoral epiphysis?

A) Excessive forward passive motion of the tibia with the knee flexed
B) Lateral displacement of the patella with active knee flexion
C) Limited internal rotation of the flexed hip
D) Reduced hip abduction with the hip flexed
E) An inability to extend the hip past the neutral position

231. A 54-year-old male presents with hearing loss associated with tinnitus. Which one of the following additional characteristics would be an indication for MRI of the brain to assess for an intracranial tumor?

A) A rapid onset of symptoms
B) Unilateral symptoms
C) Association with pain and otorrhea in the affected ear
D) Exposure to loud noise shortly before the symptoms began

232. A 65-year-old male comes to your office with symptoms consistent with intermittent claudication in both lower extremities. These symptoms are making it difficult for him to walk any significant distance and to manage his daily activities. He has smoked one pack of cigarettes per day for the past 40 years and has moderate hypertension, an elevated LDL-cholesterol level, and a low HDL-cholesterol level.

On examination you note that the skin on the patient's lower legs is cool and shiny, with sparse hair. Distal pulses are not palpable and capillary refill is prolonged. His ankle-brachial index is 0.85 (N 1.0–1.4). His cardiac examination is normal, with no evidence of heart failure.

Which one of the following pharmacologic options for improving this patient's claudication symptoms is supported by the best available evidence?

A) Aspirin
B) Warfarin (Coumadin)
C) Clopidogrel (Plavix)
D) Pentoxifylline
E) Cilostazol (Pletal)

233. A 54-year-old male presents to your office with a 10-day history of increasing cough. A physical examination reveals coarse crackles in the left lower lobe. You make a diagnosis of pneumonia. The patient's only current medication is simvastatin (Zocor).

Which one of the following is CONTRAINDICATED in this patient?

A) Amoxicillin/clavulanate (Augmentin)
B) Azithromycin (Zithromax)
C) Clarithromycin (Biaxin)
D) Doxycycline
E) Levofloxacin (Levaquin)

234. A previously healthy 50-year-old male presents with a heart rate of 156 beats/min and a blood pressure of 126/84 mm Hg. An EKG shows a regular, narrow-complex tachycardia. Vagal maneuvers have no effect, and the patient appears anxious.

Administration of which one of the following medications is the best initial treatment?

A) Vasopressin (Pitressin)
B) Verapamil (Calan)
C) Diltiazem
D) Adenosine (Adenocard)
E) Digoxin

235. A 52-year-old male with diabetes mellitus reports that he ran out of insulin a week ago. He is drowsy but responds to your verbal commands, and the remainder of his examination is unremarkable.

Laboratory Findings

Blood glucose	625 mg/dL
Serum sodium	128 mEq/L (N 135–145)
Serum potassium	5.9 mEq/L (N 3.5–5.0)
Serum bicarbonate	12 mEq/L (N 22–26)
BUN	52 mg/dL (N 8–25)

Which one of the laboratory abnormalities is an indication that he has severe diabetic ketoacidosis?

A) Glucose
B) Sodium
C) Potassium
D) Bicarbonate
E) BUN

236. A 51-year-old female has resistant hypertension, and you decide to test her for primary hyperaldosteronism. Which one of the following is the preferred initial test for this condition?

A) A morning serum cortisol level
B) A morning serum renin to aldosterone ratio
C) A morning urinary potassium level
D) A salt suppression test
E) Abdominal MRI

237. As part of routine care for a 31-year-old female you obtain a Papanicolaou (Pap) test for cervical cancer screening. The cytology results are normal, and the sample is positive for the presence of HPV but negative for serotypes 16 and 18.

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

A) Immediate colposcopy
B) Repeat Pap and HPV testing in 3 months
C) Repeat Pap and HPV testing in 6 months
D) Repeat Pap and HPV testing in 1 year
E) Repeat Pap and HPV testing in 3 years

238. A 34-year-old female with a history of type 2 diabetes mellitus requests your advice regarding influenza vaccine. She is concerned because 6 months ago she developed hives after ingesting eggs and another physician suggested that she avoid influenza vaccine. She has not experienced wheezing, vomiting, or swelling in her throat after ingesting eggs.

Which one of the following would be the best strategy for this patient?

A) Avoid giving influenza vaccine
B) Administer the live-attenuated influenza vaccine and observe for 30 minutes
C) Administer trivalent inactivated vaccine and observe for 30 minutes
D) Have the patient take prednisone, 20 mg for 3 days, then administer the live-attenuated influenza vaccine and observe for 30 minutes
E) Have the patient take prednisone, 20 mg for 3 days, and then administer the trivalent inactivated vaccine and observe for 30 minutes

239. A 45-year-old male with diabetes mellitus sees you for the first time. If the patient has not previously received it, which one of the following vaccines is recommended for him by the Advisory Committee on Immunization Practices?

A) Hepatitis A
B) Hepatitis B
C) Meningococcal
D) Varicella zoster

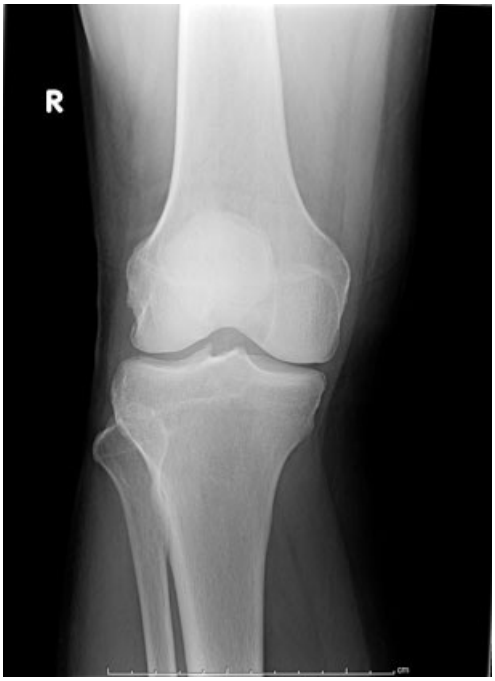
240. Which one of the following nutritional management strategies is associated with better outcomes in patients with mild acute pancreatitis whose pain and nausea have resolved?

A) Waiting until lipase has normalized before beginning oral intake
B) Early initiation of a clear liquid diet
C) Early initiation of a low-fat diet
D) Early initiation of tube feeding
E) Early initiation of total parenteral nutrition

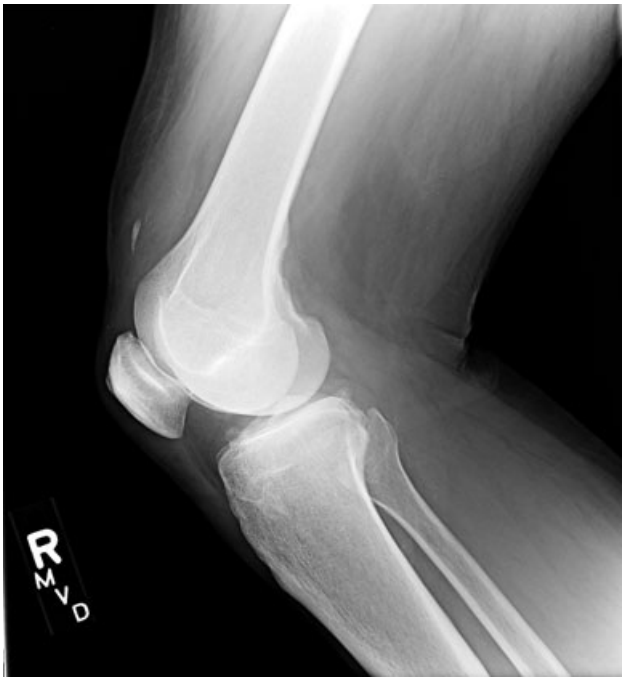
American Board of Family Medicine

2014 IN-TRAINING EXAMINATION

PICTORIAL ATLAS



ITEM #18



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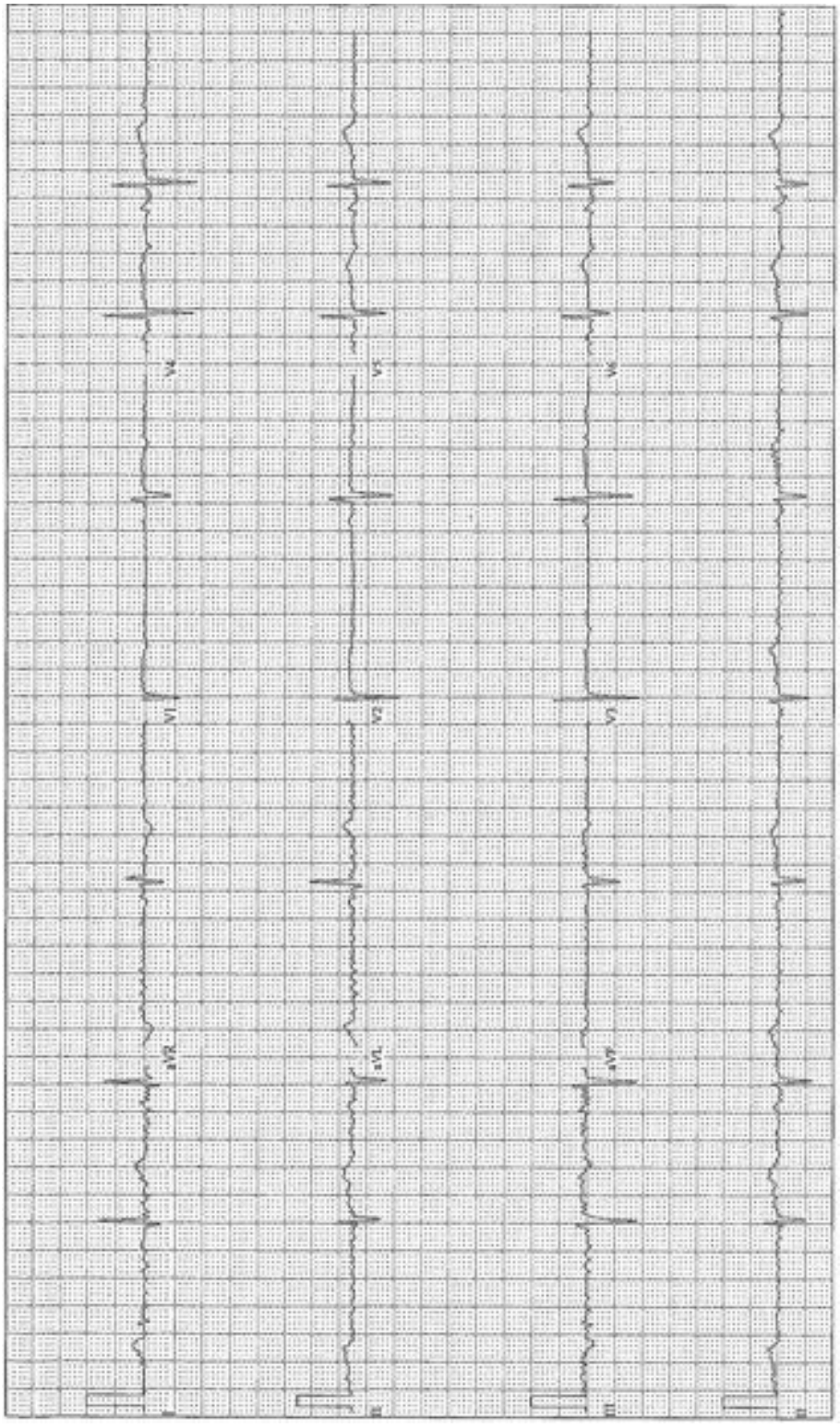

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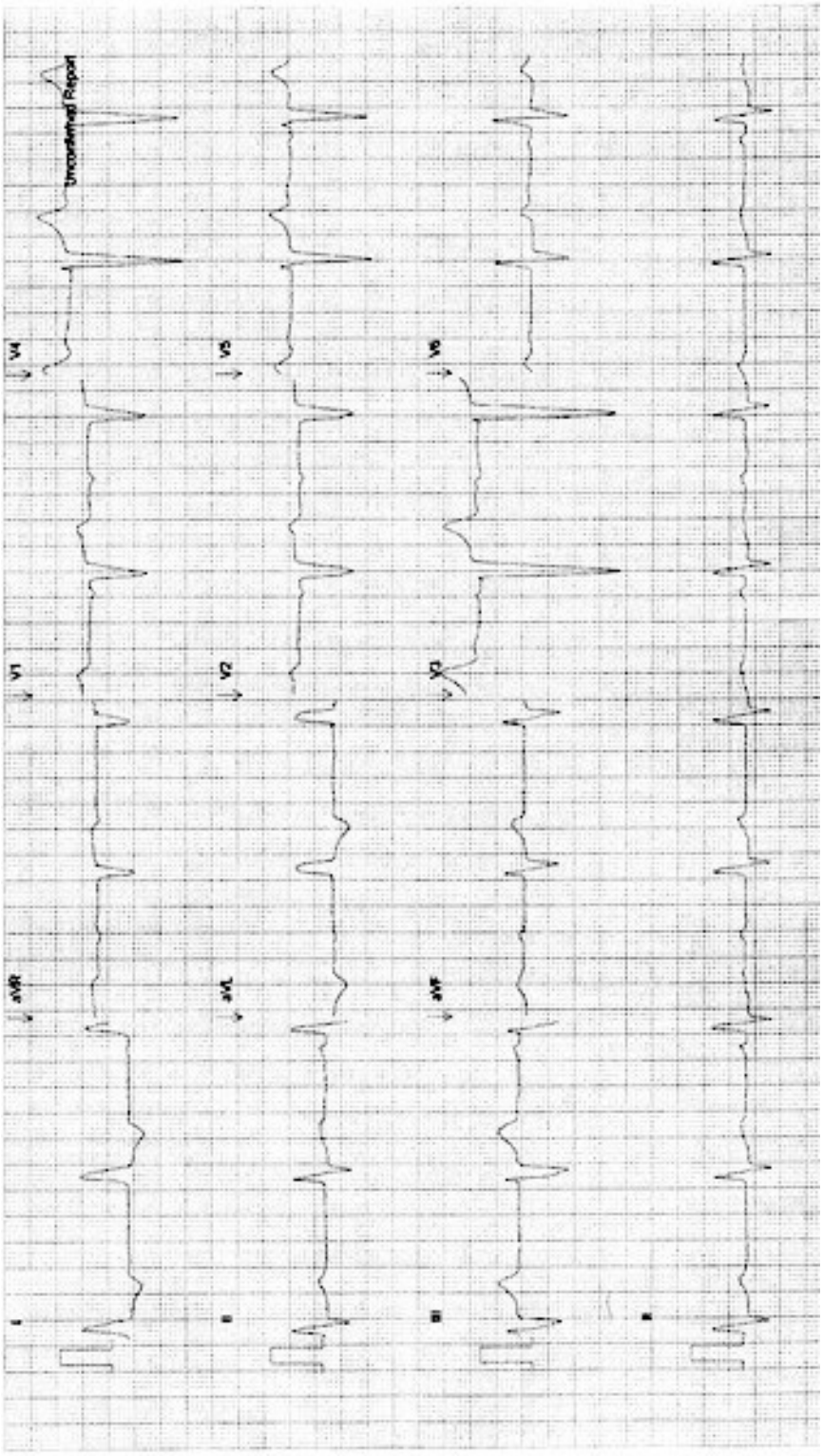

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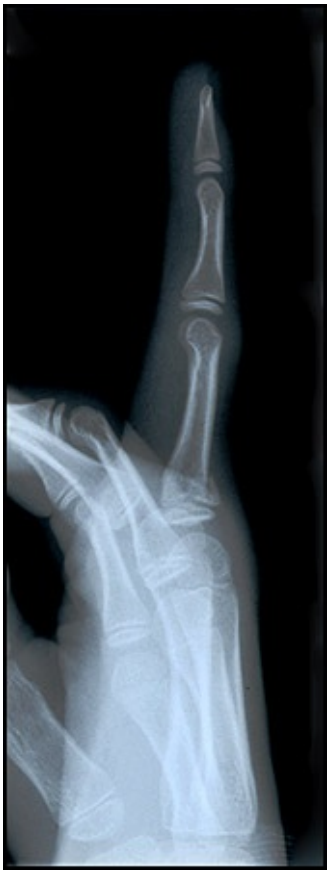
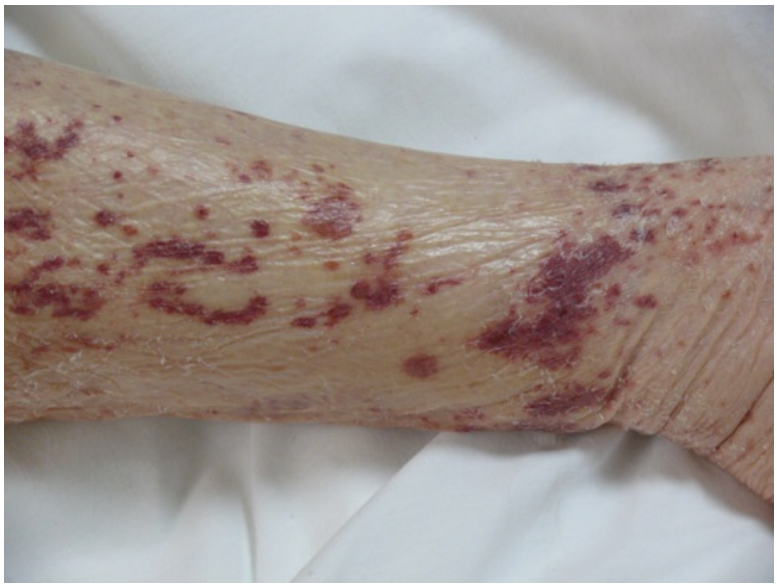
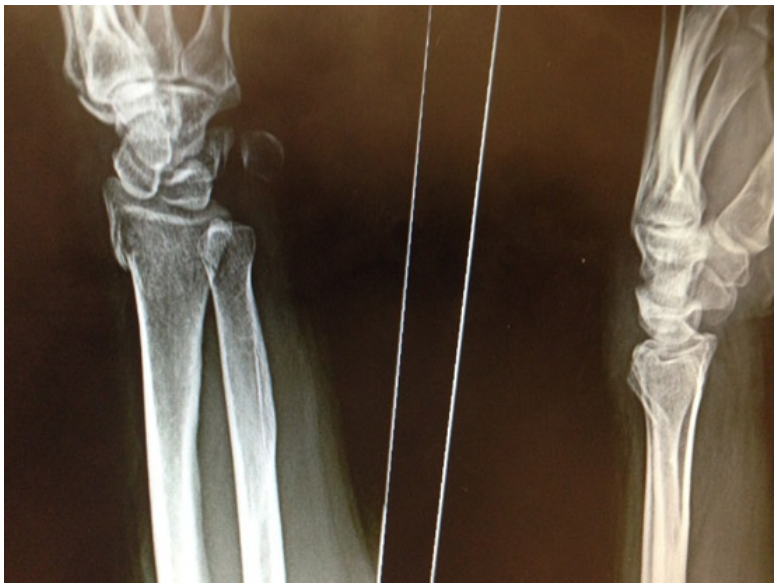


ITEM #106



ITEM #152



ITEM #181

American Board of Family Medicine

2014 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: E

Nonalcoholic fatty liver disease is characterized by the accumulation of fat in hepatocytes. It is associated with insulin resistance, central adiposity, increased BMI, hypertension, and dyslipidemia. An incidentally discovered elevated AST level in the absence of alcohol or drug-induced liver disease strongly suggests the presence of nonalcoholic fatty liver disease. The goal of therapy is to prevent or reverse hepatic injury and fibrosis. Diabetes mellitus, hypertension, dyslipidemia, and other comorbid conditions should be appropriately managed.

A healthy diet, weight loss, and exercise are first-line therapeutic measures to reduce insulin resistance in patients with nonalcoholic fatty liver disease. Weight loss has been shown to both normalize AST levels and improve hepatic histology. Vitamin E has been shown to improve AST levels but has no impact on liver histology, and pentoxifylline, simvastatin, and L-carnitine have not been shown to consistently improve either AST levels or liver histology (SOR B).

Ref: Wilkins T, Tadkod A, Hepburn I, Schade RR: Nonalcoholic fatty liver disease: Diagnosis and management. Am Fam Physician 2013;88(1):35-42.

Item 2

ANSWER: C

The only FDA-approved oral treatment for acne rosacea is doxycycline at a subantimicrobial dosage (40 mg daily). This does not contribute to antibiotic resistance, even when used over several months, and is better tolerated than higher dosages. Other antibiotics have limited and low-quality supporting evidence of efficacy and may lead to antibiotic resistance.

Ref: May D, Kelsberg G, Safranek S: What is the most effective treatment for acne rosacea? J Fam Pract 2011;60(2):108a-100c. 2) Del Rosso JQ, Thiboutot D, Gallo R, et al: Consensus recommendations from the American Acne and Rosacea Society on the management of rosacea, part 3: A status report on systemic therapies. Cutis 2014;93(1):18-28.

Item 3

ANSWER: A

The American Academy of Dermatology recommends against the routine use of topical antibiotics for clean surgical wounds, based on randomized, controlled trials. Topical antibiotics have not been shown to reduce the rate of infection in clean surgical wounds compared to the use of nonantibiotic ointment or no ointment. Studies have shown that white petrolatum ointment is as effective as antibiotic ointment in postprocedure care.

Topical antibiotics can aggravate open wounds, hindering the normal wound-healing process. In addition, there is a significant risk of developing contact dermatitis, as well as a potential for antibiotic resistance. Antibiotic treatment should be reserved for wounds that show signs of infection.

Ref: Forsch RT: Essentials of skin laceration repair. Am Fam Physician 2008;78(8):945-951. 2) Levender MM, Davis SA, Kwatra SG, et al: Use of topical antibiotics as prophylaxis in clean dermatologic procedures. J Am Acad Dermatol 2012;66(3):445-451. 3) American Academy of Dermatology: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 4

ANSWER: B

The American Academy of Asthma, Allergy, and Immunology recommends that asthma not be diagnosed or treated without spirometry. Once the diagnosis is confirmed, treatment should commence with a short-acting β-agonist as needed, followed by stepwise treatment based on the severity of asthma.

Ref: Weiss LN: The diagnosis of wheezing in children. Am Fam Physician 2008;77(8):1109-1114. 2) Pollart SM, Elward KS: Overview of changes to asthma guidelines: Diagnosis and screening. Am Fam Physician 2009;79(9):761-767. 3) Johnson JD, Theurer WM: A stepwise approach to the interpretation of pulmonary function tests. Am Fam Physician 2014;89(5):359-366.

Item 5

ANSWER: E

This patient has diabetes insipidus, which is caused by a deficiency in the secretion or renal action of arginine vasopressin (AVP). AVP, also known as antidiuretic hormone, is produced in the posterior pituitary gland and the route of secretion is generally regulated by the osmolality of body fluid stores, including intravascular volume. Its chief action is the concentration of urine in the distal tubules of the kidney. Both low secretion of AVP from the pituitary and reduced antidiuretic action on the kidney can be primary or secondary, and the causes are numerous.

Patients with diabetes insipidus present with profound urinary volume, increased frequency of urination, and thirst. The urine is very dilute, with an osmolality <300 mOsm/L. Further workup will help determine the specific type of diabetes insipidus and its cause, which is necessary for appropriate treatment.

Low levels of aldosterone, plasma renin activity, or angiotensin would cause abnormal blood pressure, electrolyte levels, and/or renal function. Insulin deficiency results in diabetes mellitus.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 2904-2907.

Item 6

ANSWER: B

A reduction of the pain caused by abdominal palpation when the abdominal muscles are tightened is known as Carnett's sign. If the cause of the pain is visceral, the taut abdominal muscles may protect the locus of pain. In contrast, intensification of pain with this maneuver points to a source of pain within the abdominal wall itself.

Ref: Ortiz DD: Chronic pelvic pain in women. Am Fam Physician 2008;77(11):1535-1542.

Item 7

ANSWER: B

The concept of a medical home was first suggested by the American Academy of Pediatrics in 1967 to describe the ideal care of children with disabilities. In 2004 the Future of Family Medicine Project adapted this concept to describe how primary care should be based on "continuous, relationship-centered, whole-system, comprehensive care for communities." In 2007 all of the major primary care organizations collaborated to define the foundational principles of the patient-centered medical home (PCMH). These principles include the following:

Comprehensiveness: Most preventive, acute, and chronic care for individual patients can be performed at the PCMH.
Patient Centered: The PCMH provides care that is relationship-based, with an orientation toward the whole person.
Coordination: The PCMH coordinates care for patients across all elements of the health care system.
Accessibility: The PCMH works to provide patients with timely access to providers.
Quality: The PCMH continuously works to improve care quality and safety.

Ref: Rakel RE, Rakel DP (eds): Textbook of Family Medicine, ed 8. Elsevier Saunders, 2011, pp 17-23. 2) Patient Centered Medical Home Resource Center. Agency for Healthcare Research and Quality. http://pcmh.ahrq.gov

Item 8

ANSWER: E

Mild cognitive impairment is an intermediate stage between normal cognitive function and dementia. Motor function remains normal. The presence of the APO E4 allele is a risk factor, but is not necessary for a diagnosis. Patients have essentially normal functional activities but there is objective evidence of memory impairment, and the patient may express concerns about cognitive decline.

Ref: Roberts R, Knopman DS: Classification and epidemiology of MCI. Clin Geriatr Med 2013;29(4):753-772.

Item 9

ANSWER: A

The Centers for Disease Control and Prevention (CDC) assembled a panel of national health experts to develop evidence-based guidelines for evaluating and treating adults with acute respiratory disease. According to these guidelines, the most reliable clinical predictors of streptococcal pharyngitis are the Centor criteria. These include tonsillar exudates, tender anterior cervical lymphadenopathy, absence of cough, and history of fever. The presence of three or four of these criteria has a positive predictive value of 40%–60%, and the absence of three or four of these criteria has a negative predictive value of 80%.

Patients with four positive criteria should be treated with antibiotics, those with three positive criteria should be tested and treated if positive, and those with 0–1 positive criteria should be treated with analgesics and supportive care only. This patient has only one of the Centor criteria, and should therefore not be tested or treated with antibiotics.

Ref: McIsaac WJ, Kellner JD, Aufricht P, et al: Empirical validation of guidelines for the management of pharyngitis in children and adults. JAMA 2004;291(13):1587-1595. 2) Choby BA: Diagnosis and treatment of streptococcal pharyngitis. Am Fam Physician 2009;79(5):383-390.

Item 10

ANSWER: C

Conjugate vaccines against Haemophilus influenzae type b and Streptococcus pneumoniae have been highly effective in reducing the incidence of bacterial meningitis in young children and are now routinely recommended for infants and older patients who fall into appropriate risk groups (SOR B). Escherichia coli and Listeria monocytogenes also cause meningitis in young children, but there is not currently a routine vaccine for these pathogens. Likewise, Borrelia burgdorferi and Mycoplasma pneumoniae can cause aseptic meningitis, but there is no routine vaccine.

Ref: Schuchat A, Robinson K, Wenger JD, et al: Bacterial meningitis in the United States in 1995. Active Surveillance Team. N Engl J Med 1997;337(14):970-976. 2) Kupila L, Vuorinen T, Vainionpää R, et al: Etiology of aseptic meningitis and encephalitis in an adult population. Neurology 2006;66(1):75-80. 3) Hsu HE, Shutt KA, Moore MR, et al: Effect of pneumococcal conjugate vaccine on pneumococcal meningitis. N Engl J Med 2009;360(3):244-256. 4) Bamberger DM: Diagnosis, initial management, and prevention of meningitis. Am Fam Physician 2010;82(12):1491-1498.

Item 11

ANSWER: A

Targets for uric acid levels in patients with gout vary according to published guidelines but range from 5 to 6 mg/dL. Patients may be symptom-free at higher levels but risk joint damage even without acute episodes (SOR A).

Ref: Shmerling RH: Management of gout: A 57-year-old man with a history of podagra, hyperuricemia, and mild renal insufficiency. JAMA 2012;308(20):2133-2141.

Item 12

ANSWER: A

After confirmation of anemia and microcytosis on a CBC, a serum ferritin level is recommended (SOR C). If the ferritin level is consistent with iron deficiency anemia, identifying the underlying cause of the anemia is the priority. A common cause of iron deficiency anemia in premenopausal adult women is menstrual blood loss. If the serum ferritin level is not consistent with iron deficiency anemia, the next stage of the evaluation should include a serum iron level, total iron-binding capacity (TIBC), and transferrin saturation (SOR C). Iron deficiency anemia is still probable if the serum iron level and transferrin saturation are decreased and TIBC is increased. It is more likely anemia of chronic disease if the serum iron level is decreased and the TIBC and transferrin saturation are decreased or normal. Other laboratory tests that may help in differentiating the cause of microcytosis include hemoglobin electrophoresis, a reticulocyte count, and peripheral blood smears.

Ref: Galloway MJ, Smellie WS: Investigating iron status in microcytic anaemia. BMJ 2006;333(7572):791-793. 2) Knovich MA, Storey JA, Coffman LG, et al: Ferritin for the clinician. Blood Rev 2009;23(3):95-104. 3) Van Vranken M: Evaluation of microcytosis. Am Fam Physician 2010;82(9):1117-1122. 4) Short MW, Domagalski JE: Iron deficiency anemia: Evaluation and management. Am Fam Physician 2013;87(2):98-104.

Item 13

ANSWER: D

It is recommended that an implanted cardioverter-defibrillator be deactivated when it is inconsistent with the care goals of the patient and family. In about one-quarter of patients with an implanted cardioverter-defibrillator, the defibrillator delivers shocks in the weeks preceding death. For patients with advanced irreversible disease, defibrillator shocks rarely prevent death, may be painful, and are distressing to caregivers and family members. Advance care planning discussions should include the option of deactivating the implanted cardioverter-defibrillator when it no longer supports the patient's goals.

Ref: Goldstein NE, Lampert R, Bradley E, et al: Management of implantable cardioverter defibrillators in end-of-life care. Ann Intern Med 2004;141(11):835-838. 2) Berger JT: The ethics of deactivating implanted cardioverter defibrillators. Ann Intern Med 2005;142(8):631-634. 3) American Academy of Hospice and Palliative Medicine: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 14

ANSWER: E

Except for persistent pubertal gynecomastia, medication use and substance use are the most common causes of nonphysiologic gynecomastia. Common medication-related causes include the use of antipsychotic agents, antiretroviral drugs, or prostate cancer therapies. Spironolactone also has a high propensity to cause gynecomastia; other mineralocorticoid receptor antagonists, such as eplerenone, have not been associated with similar effects. Discontinuing the contributing agent often results in regression of breast tissue within 3 months.

Ref: Dickson G: Gynecomastia. Am Fam Physician 2012;85(7):716-722.

Item 15

ANSWER: E

The Advisory Committee on Immunization Practices (ACIP) periodically makes recommendations for routine or postexposure immunization for a number of preventable diseases, including tetanus. Since 2005, the recommendation for tetanus prophylaxis has included coverage not only for diphtheria (Td) but also pertussis, due to waning immunity in the general population. The current recommendation for adults who require a tetanus booster (either as a routine vaccination or as part of treatment for a wound) is to use the pertussis-containing Tdap unless it has been less than 5 years since the last booster in someone who has completed the primary vaccination series.

In this scenario, no additional vaccination is needed at this time, since the patient is certain of completing the primary vaccinations and received a tetanus booster within the previous 5 years. Had the interval been longer than 5 years, then a single dose of Tdap would be appropriate unless his previous booster was Tdap. Tetanus immune globulin is recommended in addition to tetanus vaccine for wounds that are tetanus-prone due to contamination and tissue damage in persons with an uncertain primary vaccine history. Plain tetanus toxoid (TT) is usually indicated only when the diphtheria component is contraindicated, which is uncommon.

Ref: Kretsinger K, Broder KR, Cortese MM, et al: Preventing tetanus, diphtheria, and pertussis among adults: Use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine recommendations of the Advisory Committee on Immunization Practices (ACIP) and recommendation of ACIP, supported by the Healthcare Infection Control Practices Advisory Committee (HICPAC), for use of Tdap among health-care personnel. MMWR Recomm Rep 2006;55(RR-17):1-37. 2) Centers for Disease Control and Prevention (CDC): Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) vaccine from the Advisory Committee on Immunization Practices, 2010. MMWR Morb Mortal Wkly Rep 2011;60(1):13-15. 3) Bader MS, McKinsey DS: Postexposure prophylaxis for common infectious diseases. Am Fam Physician 2013;88(1):25-32.

Item 16

ANSWER: D

Patients with repeated EKGs showing a QTc interval >480 ms with a syncopal episode, or >500 ms in the absence of symptoms, are diagnosed with long QT syndrome if no secondary cause such as medication use is present. This syndrome occurs in 1 in 2000 people and consists of cardiac repolarization defects. It is associated with polymorphic ventricular tachycardia, including torsades de pointes, and sudden cardiac death. It may be treated with β-blockers and implanted cardioverter defibrillators.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 1897-1900.

Item 17

ANSWER: D

The initial management of hypercalcemic crisis involves volume repletion and hydration. The combination of inadequate fluid intake and the inability of hypercalcemic patients to conserve free water can lead to calcium levels >14–15 mg/dL. Because patients often have a fluid deficiency of 4–5 liters, delivering 1000 mL of normal saline during the first hour, followed by 250–300 mL/hour, may decrease the hypercalcemia to less than critical levels (<13 mg/dL). If the clinical status is not satisfactory after hydration alone, then renal excretion of calcium can be enhanced by saline diuresis using furosemide.

Intravenous pamidronate, a bisphosphonate, reduces the hypercalcemia of malignancy and is best used in the semi-acute setting, since calcium levels do not start to fall for 24 hours. Glucocorticoids are useful in the treatment of hypercalcemia associated with certain malignancies (multiple myeloma, leukemia, several lymphomas, and breast cancer) or with vitamin D intoxication. The onset of action, however, takes several days, with the effect lasting days to weeks.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 3111-3113.

Item 18

ANSWER: B

Quadriceps tendon rupture can be partial or complete. When complete, as in this case, the patient has no ability to straighten the leg actively. A similar pattern is seen with patellar tendon rupture, but in this situation the patella is retracted superiorly by the quadriceps. Quadriceps rupture often produces a sulcus sign, a painful indentation just above the patella. If the patient is not examined soon after the injury, the gap in the quadriceps can fill with blood so that it is no longer palpable. The clinical examination is usually diagnostic for this condition, but this patient's radiograph shows some interesting findings, especially on the lateral view. A small shard of the patella has been pulled off and has migrated superiorly with the quadriceps. The hematoma filling the gap in the quadriceps is the same density as the muscle, but wrinkling of the fascia over the distal quadriceps provides a clue that it is no longer attached to the superior margin of the patella.

Tibial plateau fractures are intra-articular, so they produce a large hemarthrosis. They are evident on a radiograph in almost all cases. Pain inhibits movement of the knee, but the extreme weakness evident in this case would not be seen.

Patellar subluxation is obvious acutely, when the patella is displaced laterally. More often, the patient comes in after the patella has relocated. Findings then include tenderness along the medial retinaculum, sometimes a joint effusion, and a positive apprehension sign when the patella is pushed gently laterally.

Lumbar radiculopathy can cause weakness of the quadriceps if it involves the third lumbar root, but complete paralysis would not occur. Other findings would include lumbar pain radiating to the leg, possibly with paresthesias and fasciculations if there were significant neurologic impairment.

Ref: Ilan DI, Tejwani N, Keschner M, Leibman M: Quadriceps tendon rupture. J Am Acad Orthop Surg 2003;11(3):192-200.
2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 1680-1681.

Item 19

ANSWER: B

Transvaginal ultrasonography is the preferred initial test for a patient with painless postmenopausal bleeding, although endometrial biopsy is an option if transvaginal ultrasonography is not available. Transvaginal ultrasonography showing an endometrial thickness $<3–4$ mm would essentially rule out endometrial carcinoma (SOR C). An endometrial biopsy is invasive and has low sensitivity for focal lesions. Saline infusion hysterography should be considered if the endometrial thickness is greater than the threshold, or if an adequate measurement cannot be obtained by ultrasonography. If hysterography shows a global process, then a histologic diagnosis can usually be obtained with an endometrial biopsy, but if a focal lesion is present hysteroscopy should be considered as the next diagnostic step. Colposcopy is not indicated given the patient's normal Papanicolaou smear.

Ref: Apgar BS, Kaufman AJ, Bettcher C, Parker-Featherstone E: Gynecologic procedures: Colposcopy, treatments for cervical intraepithelial neoplasia and endometrial assessment. Am Fam Physician 2013;87(12):836-843.

Item 20

ANSWER: C

Systemic corticosteroid therapy reduces the hospital length of stay in patients with acute COPD exacerbations (SOR A). Oral therapy has been shown to be as effective as the intravenous route in patients who can tolerate oral intake (SOR B). A randomized, controlled trial has demonstrated that 5-day courses of systemic corticosteroid therapy are at least as effective as 14-day courses (SOR A). Inhaled corticosteroids are beneficial in some COPD patients but nebulizers generally do not offer significant advantages over metered-dose inhalers in most patients.

Ref: Evensen AE: Management of COPD exacerbations. Am Fam Physician 2010;81(5):607-613. 2) Slawson D: Five-day steroid treatment effective for acute COPD exacerbation. Am Fam Physician 2013;88(11). 3) Leuppi JD, Schuetz P, Bingisser R, et al: Short-term vs conventional glucocorticoid therapy in acute exacerbations of chronic obstructive pulmonary disease: The REDUCE randomized clinical trial. JAMA 2013;309(21):2223-2231.

Item 21

ANSWER: E

Irritable bowel syndrome (IBS) symptoms improve with several different medications and alternative therapies. Exercise, probiotics, antibiotics, antispasmodics, antidepressants, psychological treatments, and peppermint oil all have evidence that they may improve IBS symptoms (SOR B). A Cochrane review of 15 studies involving 922 patients found a beneficial effect from antidepressants with regard to improvement in pain and overall symptom scores compared to placebo. SSRIs used in these trials included citalopram, fluoxetine, and paroxetine, and tricyclic antidepressants included amitriptyline, desipramine, and imipramine. Buspirone, clonazepam, divalproex sodium, and risperidone have not been shown to be effective for symptom relief in IBS patients.

Ref: Ruepert L, Quartero AO, de Wit NJ, et al: Bulking agents, antispasmodics and antidepressants for the treatment of irritable bowel syndrome. Cochrane Database Syst Rev 2011;(8):CD003460. 2) Wilkins T, Pepitone C, Alex B, Schade RR: Diagnosis and management of IBS in adults. Am Fam Physician 2012;86(5):419-426. 3) Ford AC, Talley NJ: Irritable bowel syndrome. BMJ 2012;345:e5836.

Item 22

ANSWER: D

While anyone, even previously healthy individuals, may benefit from treatment of symptomatic clinical influenza infection with antiviral agents, not everyone who has been exposed but is asymptomatic requires chemoprophylaxis. However, persons at higher risk for complications from influenza should be considered for preventive treatment. Those at highest risk include children under the age of 2 years, pregnant women (including women less than 2 weeks post partum), adults over the age of 65, the morbidly obese (BMI $>40\ kg/m^2$), and Native or Alaskan Americans. If persons at high risk for influenza complications are not treated prophylactically with antiviral agents after exposure, then they should receive prompt treatment as soon as possible after developing signs and symptoms of influenza infection.

Ref: Antiviral drugs for influenza 2013–2014. Med Lett Drugs Ther 2014;56(1434):6-8.

Item 23

ANSWER: E

The Infectious Diseases Society of America recommends that penicillin remain the treatment of choice for group A streptococcal pharyngitis because of its proven efficacy, safety, narrow spectrum, and low cost. Penicillin-resistant group A Streptococcus has never been documented. Amoxicillin is often used in place of penicillin V as oral therapy for young children, primarily because of acceptance of the taste of the suspension. The other options listed are all possible regimens for group A streptococcal pharyngitis but penicillin is still considered the treatment of choice.

Ref: Shulman ST, Bisno AL, Clegg HW, et al: Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America. Clin Infect Dis 2012;55(10):1279-1282.

Item 24

ANSWER: C

While all of the conditions listed are in the differential diagnosis, the most likely in this patient is Rocky Mountain spotted fever (RMSF) (SOR C). It is transmitted by ticks and occurs throughout the United States, but is primarily found in the South Atlantic and South Central states. It is most common in the summer and with exposure to tall vegetation from activities such as camping, hiking, or gardening. The diagnosis is based on clinical criteria that include fever, hypotension, rash, myalgia, vomiting, and headache (sometimes severe). The rash associated with RMSF usually appears 2–4 days after the onset of fever and begins as small, pink, blanching macules on the ankles, wrists, or forearms that evolve into maculopapules. It can occur anywhere on the body, including the palms and soles, but the face is usually spared.

Mucocutaneous lymph node syndrome is a similar condition in children (usually <2 years old), but symptoms include changes in the lips and oral cavity, such as strawberry tongue, redness and cracking of the lips, and erythema of the oropharyngeal mucosa. Leptospirosis is usually accompanied by severe cutaneous hyperesthesia. The patient with scarlet fever usually has prominent pharyngitis and a fine, papular, erythematous rash. Toxic shock syndrome may present in a similar fashion, but usually in postmenarchal females.

Ref: Huntzinger A: Guidelines for the diagnosis and treatment of tick-borne rickettsial diseases. Am Fam Physician 2007;76(1):137-139. 2) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 1407-1410.

Item 25

ANSWER: D

Morphine should be avoided in patients with renal insufficiency because the toxic metabolites morphine-3-glucuronide and morphine-6-glucuronide are not eliminated by the kidneys. Accumulation of these metabolites causes neuroexcitatory effects, including confusion, sedation, respiratory depression, and myoclonus.

Fentanyl and methadone are considered the safest opioids to use in patients with end-stage renal disease, but they require careful titration, dosage adjustments as necessary, continued monitoring, and an awareness of possible interactions with other medications that patients may be taking.

Ref: Moryl N, Coyle N, Foley KM: Managing an acute pain crisis in a patient with advanced cancer. JAMA 2008;299(12):1457-1467. 2) O'Connor NR, Corcoran AM: End-stage renal disease: Symptom management and advance care planning. Am Fam Physician 2012;85(7):705-710.

Item 26

ANSWER: A

Viruses cause 80% of infectious conjunctivitis cases and viral conjunctivitis usually requires no treatment. Bacterial conjunctivitis is associated with mattering and adherence of the eyelids. Topical antibiotics reduce the duration of bacterial conjunctivitis but have no effect on viral conjunctivitis. Allergic conjunctivitis would be more likely if the patient reported itching. Antibiotics or corticosteroids would not be helpful in this patient, and would not prevent complications.

The majority of cases of viral conjunctivitis are caused by adenoviruses, which cause pharyngeal conjunctival fever and epidemic keratoconjunctivitis. Pharyngeal conjunctival fever is characterized by high fever, pharyngitis, and bilateral eye inflammation. Keratoconjunctivitis occurs in epidemics, and is associated with a watery discharge, hyperemia, and ipsilateral lymphadenopathy in $>50\%$ of cases.

Ref: Azari AA, Barney NP: Conjunctivitis: A systematic review of diagnosis and treatment. JAMA 2013;310(16):1721-1729.

Item 27

ANSWER: A

The Society of Hospital Medicine recommends that urinary catheters not be placed or left in place for managing incontinence or for staff convenience, or for monitoring output in patients who are not critically ill. The Infectious Diseases Society of America recommends using patient weight to monitor diuresis. Acceptable indications for an indwelling catheter include critical illness, obstruction, hospice care, and perioperatively for <2 days for urologic procedures.

Ref: Saint S, Meddings JA, Calfee D, et al: Catheter-associated urinary tract infection and the Medicare rule changes. Ann Intern Med 2009;150(12):877-884. 2) Hooton TM, Bradley SF, Cardenas DD, et al: Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Clin Infect Dis 2010;50(5):625-663. 3) Society of Hospital Medicine: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 28

ANSWER: E

Statin drugs are effective for preventing stroke, which should be the key goal in this high-risk patient. They may stabilize the intimal wall. Rapid lowering of blood pressure could cause brain injury by reducing blood flow in patients with carotid stenosis. Any evidence of hypoperfusion needs to be corrected immediately. Combination therapy with aspirin and clopidogrel is associated with an increased risk of bleeding and is not recommended for stroke prevention. Patients over age 70 have worse outcomes with carotid stenting than with endarterectomy. Occult patent ductus arteriosus has not been shown to be a significant risk factor for stroke.

Ref: Grotta JC: Carotid stenosis. N Engl J Med 2013;369(12):1143-1150.

Item 29

ANSWER: D

Common features of acute adrenal insufficiency include fatigue and lack of energy, weight loss, hypotension, loss of appetite, nausea, and vomiting. Other features such as dry skin, hyperpigmentation, and abdominal pain are seen to varying degrees. Common laboratory findings include electrolyte disturbances, hyponatremia, hyperkalemia, hypercalcemia, azotemia, anemia, and eosinophilia. Patients can also have unexplained hypoglycemia. Patients with advanced-stage cancer (especially of the lung or breast) may develop acute adrenal insufficiency from metastatic infiltration of the adrenal glands. Intravenous hydrocortisone is the treatment of choice in the management of adrenal crisis. For managing hypotension, dopamine is recommended for patients with sepsis, dobutamine for those in cardiogenic shock, and packed RBCs for those with hemorrhagic shock. Broad-spectrum antibiotics are part of the therapy for sepsis, but are not first-line agents for hypotension (SOR B).

Ref: Chou SH: Adrenal insufficiency. Hosp Med Clin 2012;1(1):e97-e108.

Item 30

ANSWER: D

Osteomyelitis is a serious complication of diabetic foot infections and is present in up to 20% of mild to moderate infections and in 50%–60% of severe infections. While a bone biopsy and/or bone cultures are definitive for making the diagnosis, radiologic studies can also be helpful. Plain radiography may show bony destruction but has a sensitivity for osteomyelitis ranging from 28% to 75%, depending on the timing of the examination and the severity of the infection. It may take weeks for these infections to become apparent on plain radiographs. The sensitivity of triple-phase technetium bone scans is up to 90% but they have low specificity for osteomyelitis. The 90% sensitivity and 80% specificity of MRI is superior to all other imaging modalities.

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

Item 31

ANSWER: A

Initial testing with serum ferritin levels and transferrin saturation is indicated when hereditary hemochromatosis is suspected. Normal values for these tests exclude iron-mediated organ dysfunction. Genetic testing is indicated if the serum ferritin level is >300 ng/mL in men or >200 ng/mL in women, or if transferrin saturation is $\geq 45\%$. A liver biopsy would be indicated to determine hepatic iron content and histopathology if the ferritin level were ≥ 1000 ng/mL or liver transaminases were elevated in a patient who is homozygous for C282Y. An α-fetoprotein level and hepatic ultrasonography would be indicated to detect hepatocellular carcinoma if the condition has already advanced to cirrhosis.

Ref: Crownover BK, Covey CJ: Hereditary hemochromatosis. Am Fam Physician 2013;87(3):183-190.

Item 32

ANSWER: D

A full set of pulmonary function tests consists of spirometry, helium lung volume measurements, and the measurement of diffusing capacity of the lung for carbon monoxide (DLCO). A bronchodilator challenge will allow assessment of reversible airway obstruction. A methacholine challenge test can also be used to look for airway hyperreactivity. A reduced FVC with either a normal or increased FEV_1/FVC ratio is consistent with restrictive lung disease. There are three basic categories of restrictive lung disease: intrinsic lung disease, chest wall deformities, and neuromuscular disorders. A reduced FEV_1 and decreased FEV_1/FVC ratio is seen in obstructive lung disease (asthma, COPD). The DLCO is the measure of the diffusion of carbon monoxide across the alveolar-capillary membrane. Reduced values are obtained when interstitial fibrosis is extensive, or when the capillary surface is compromised by vascular obstruction or nonperfusion, or is destroyed (as in emphysema).

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 524-527.

Item 33

ANSWER: A

According to the American Academy of Pediatrics, preschool-age children with ADHD should receive behavioral therapy alone, administered by a parent and/or teacher. Initially prescribing behavioral therapy alone is supported by strong overall evidence and also by a study finding that many preschool-age children with moderate to severe dysfunction had improved symptoms with behavioral therapy alone. If significant improvement is not observed, then methylphenidate can be added. Medications combined with behavioral therapy should be prescribed in elementary school–age children. Evidence for the use of stimulants is strong, and evidence for the use of atomoxetine is sufficient, but not as strong as for the stimulants.

Ref: Subcommittee on Attention-Deficit/Hyperactivity Disorder; Steering Committee on Quality Improvement and Management; Wolraich M, Brown L, Brown RT, et al: ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics 2011;128(5):1007-1022.

Item 34

ANSWER: C

This patient has lichen simplex chronicus, consisting of lichenified plaques and excoriations that result from excessive scratching. Treatment focuses on stopping the itch-scratch cycle. Topical corticosteroids under an occlusive dressing or intralesional corticosteroids can be helpful. Scabies lesions are small, erythematous papules that are frequently excoriated. Contact dermatitis is usually associated with direct skin exposure to an allergen or irritant and is typically localized to the area of exposure. Chronic urticaria causes a typical circumscribed, raised, erythematous lesion with central pallor.

Ref: Moses S: Pruritus. Am Fam Physician 2003;68(6):1135-1142. 2) Habif TP: Clinical Dermatology: A Color Guide to Diagnosis and Therapy, ed 5. Mosby Elsevier, 2010, pp 115-118.

Item 35

ANSWER: A

Amlodipine is metabolized by the cytochrome P450 3A4 enzyme. Clarithromycin is a strong 3A4 inhibitor that can slow the metabolism of calcium channel blockers metabolized by this enzyme, thus increasing their levels. This can lead to hypotension, edema, and acute kidney injury due to decreased renal perfusion. It is preferable to choose a different antibiotic regimen for patients on a dihydropyridine calcium channel blocker such as amlodipine, but if another antibiotic cannot be used, either temporarily stopping the calcium channel blocker or empirically lowering the dosage should be considered.

Ref: Gandhi S, Fleet JL, Bailey DG, et al: Calcium-channel blocker—Clarithromycin drug interactions and acute kidney injury. JAMA 2013;310(23):2544-2553.

Item 36

ANSWER: C

Basal cell carcinoma is the most common invasive malignant cutaneous neoplasm in humans. The tumor rarely metastasizes but it can advance by direct extension and can destroy normal tissue. Approximately 85% of all basal cell carcinomas occur on the head and neck, with 25%–30% on the nose. Lesions on the nose, eyelid, chin, jaw, and ear have higher recurrence rates than lesions in other locations. A biopsy is necessary to make a definitive diagnosis prior to treatment. Excision is preferred for larger tumors with well-defined borders, but wide margins are not necessary. It is very difficult to perform this surgery with a primary closure around the nose. For lesions around the nose, especially those >1 cm, Mohs micrographic surgery is the preferred treatment. This is a microscopically controlled technique that facilitates removal of the entire lesion with the least amount of tissue removed.

Imiquimod is an immune response modifier that can be used on superficial basal cell carcinomas but should not be used for a site with a high risk of recurrence. Electrodesiccation and curettage is effective for smaller nodular basal cell carcinomas. Cryotherapy is not recommended.

Ref: Habif TP: Clinical Dermatology: A Color Guide to Diagnosis and Therapy, ed 5. Mosby Elsevier, 2010, pp 801-811. 2) Kundu RV, Patterson S: Dermatologic conditions in skin of color: Part I. Special considerations for common skin disorders. Am Fam Physician 2013;87(12):850-856.

Item 37

ANSWER: A

Lateral epicondylitis is a common condition characterized by degeneration of the extensor carpi radialis muscle tendon originating in the lateral epicondyle. It is a self-limited condition and usually resolves within 12–18 months without treatment. It is not an inflammatory condition and anti-inflammatory agents have not been found to be beneficial. Corticosteroid injections have been found to be associated with poor long-term outcomes, as well as high recurrence rates. Neither physical therapy, bracing, nor splinting is proven to provide long-term pain relief. Approximately 90%–95% of all patients with lateral epicondylitis show improvement at 1 year despite the type of therapy utilized (SOR A).

Ref: Coombes BK, Bisset L, Brooks P, et al: Effect of corticosteroid injection, physiotherapy, or both on clinical outcomes in patients with unilateral lateral epicondylalgia: A randomized controlled trial. JAMA 2013;309(5):461-469. 2) Sims SEG, Miller K, Elfar JC, Hammert WC: Non-surgical treatment of lateral epicondylitis: A systematic review of randomized controlled trials. Hand May 2014.

Item 38

ANSWER: D

In March of 2013 the FDA issued a safety warning regarding azithromycin and its potential to lead to serious and even fatal arrhythmias, particularly in at-risk patients. Risk factors include hypokalemia, hypomagnesemia, a prolonged QT interval, and the use of certain medications to treat abnormal heart rhythms. The mechanism of action is prolongation of the QT interval, leading to torsades de pointes (level of evidence 2, SOR A).

The FDA recommends that physicians consider the risk of torsades de pointes and fatal heart rhythms associated with azithromycin when considering antibiotic treatment options, particularly in patients who are already at risk for cardiovascular events.

Ref: FDA Drug Safety Communication: Azithromycin (Zithromax or Zmax) and the risk of potentially fatal heart rhythms, 2013.

Item 39

ANSWER: C

This patient continues to have an elevated hemoglobin A_{1c} and bedtime hyperglycemia. The addition of a rapid-acting insulin at dinner would be the next step in management. For patients exhibiting blood glucose elevations before dinner, the addition of rapid-acting insulin at lunch is preferred. For patients with elevations before lunch, rapid-acting insulin with breakfast would most likely improve glucose control. Increasing or splitting the insulin glargine would be unlikely to improve management.

Ref: Nathan DM, Buse JB, Davidson MB, et al: Medical management of hyperglycemia in type 2 diabetes: A consensus algorithm for the initiation and adjustment of therapy: A consensus statement of the American Diabetes Association and the European Association for the Study of Diabetes. Diabetes Care 2009;32(1):193-203.

Item 40

ANSWER: A

This patient exhibits signs of possible sepsis, including fever, altered mental status, tachycardia, and tachypnea. Confirmation of a documented infection would establish the diagnosis, but treatment should be started before the infection is confirmed. Initial management includes respiratory stabilization. This patient responded to oxygen supplementation, but if he had not, mechanical ventilation would be indicated. The next appropriate step is fluid resuscitation. A bolus of intravenous fluids at 20 mL/kg over 30 minutes or less is recommended (SOR A). Vasopressors should be started if a patient does not respond to intravenous fluids as evidenced by an adequate increase in mean arterial pressure and organ perfusion (SOR B). First-line agents include dopamine and norepinephrine. Vasopressin may be added but has not been shown to improve mortality. Bicarbonate therapy is not usually recommended to improve hemodynamic status. Hydrocortisone may be used in patients who do not respond to fluids and vasopressors.

Ref: Gauer RL: Early recognition and management of sepsis in adults: The first six hours. Am Fam Physician 2013;88(1):44-53.

Item 41

ANSWER: D

This case is consistent with physiologic genu valgus, and the parents should be reassured. Toddlers under 2 years of age typically have a varus angle at the knee (bowlegs). This transitions to physiologic genu valgus, which gradually normalizes by around 6 years of age. As this condition is physiologic, therapies such as surgical intervention, special bracing, and exercise programs are not indicated.

Ref: Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, pp 2344-2351.

Item 42

ANSWER: E

This patient has documented bradycardia on an EKG and a diagnosis of sick sinus syndrome. She has symptomatic end-organ hypoperfusion resulting from her slow heart rate. In addition to lightheadedness and fatigue, other manifestations can include palpitations, angina, heart failure, oliguria, TIA, or stroke. In a symptomatic patient with documented bradycardia, permanent pacemaker placement is recommended (SOR C).

If a patient is symptomatic but bradycardia is not evident on the EKG, prolonged monitoring is recommended with a 48-hour Holter monitor. The next step would be longer monitoring with an event monitor.

Evidence of sick sinus syndrome may be seen with exercise treadmill testing. Patients with chronotropic incompetence may be unable to achieve target heart rates with exercise. However, the exercise treadmill test is not standardized to diagnose sick sinus syndrome.

Patients with sick sinus syndrome may have problems resulting from anesthesia during surgery. Clearing these patients for surgery may not be in their best interest.

Ref: Semelka M, Gera J, Usman S: Sick sinus syndrome: A review. Am Fam Physician 2013;87(10):691-696.

Item 43

ANSWER: A

Topical intranasal glucocorticoids are currently believed to be the most efficacious medications for the treatment of allergic rhinitis. They are far superior to oral preparations in terms of safety. Cromolyn sodium is also an effective topical agent for allergic rhinitis; however, it is more effective if started prior to the season of peak symptoms. Because of the high risk of rhinitis medicamentosa with chronic use of topical decongestants, these agents have limited usefulness in the treatment of allergic rhinitis.

Azelastine, an intranasal antihistamine, is effective for controlling symptoms but can cause somnolence and a bitter taste. Oral antihistamines are not as useful for congestion as for sneezing, pruritus, and rhinorrhea. Overall, they are not as effective as topical glucocorticoids.

Ref: Lambert M: Practice guidelines for managing allergic rhinitis. Am Fam Physician 2009;80(1):79. 2) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 2716-2718.

Item 44

ANSWER: D

There is substantial evidence that small (<10 mm) hyperplastic polyps found in the rectum or sigmoid colon are not neoplastic. Data obtained from numerous studies provides considerable evidence of moderate quality that individuals with no significant findings other than rectal or sigmoid hyperplastic polyps of this size should be included in the same low-risk cohort as those who have an unremarkable colonoscopy. For patients at low risk the recommended interval between screening colonoscopies is 10 years. Reductions in this interval are recommended for patients with one or two small tubular adenomas (5–10 years) or those with three or more tubular adenomas (3 years); the interval for more extensive disease is best individualized but can be as often as annually in unusual cases.

Ref: Lieberman DA, Rex DK, Winawer SJ, et al: Guidelines for colonoscopy surveillance after screening and polypectomy: A consensus update by the US Multi-Society Task Force on Colorectal Cancer. Gastroenterology 2012;143(3):844–857.

Item 45

ANSWER: A

Pain involving the big toe is a common problem. The first metatarsophalangeal (MTP) joint has two sesamoid bones, and injuries to these bones account for 12% of big-toe injuries. Overuse, a sharp blow, and sudden dorsiflexion are the most common mechanisms of injury.

Gout often involves the first MTP joint, but the onset is sudden, with warmth, redness, and swelling, and pain on movement of the joint is common. Morton's neuroma typically causes numbness involving the digital nerve in the area, and usually is caused by the nerve being pinched between metatarsal heads in the center of the foot. Cellulitis of the foot is common, and can result from inoculation through a subtle crack in the skin. However, there would be redness and swelling, and the process is usually more generalized.

Sesamoiditis is often hard to differentiate from a true sesamoid fracture. Radiographs should be obtained, but at times they are nondiagnostic. Fortunately, treatment is similar for both conditions, unless the fracture is open or widely displaced. Limiting weight bearing and flexion to control discomfort is the first step. More complex treatments may be needed if the problem does not resolve in 4–6 weeks.

Ref: Browner BD, Jupiter JB, Levine AM, et al (eds): Skeletal Trauma: Basic Science, Management, and Reconstruction, ed 4. WB Saunders Co, 2009, pp 2721-2722. 2) Brukner P, Khan K: Clinical Sports Medicine, ed 4. McGraw-Hill, 2012, pp 869-870.

Item 46

ANSWER: B

There is no currently approved treatment for Raynaud's disease. However, patients with this disorder reportedly experience subjective symptomatic improvement with dihydropyridine calcium channel antagonists, with nifedipine being the calcium channel blocker of choice. α_1-Antagonists such as prazosin or terazosin are also effective. β-Blockers can produce arterial insufficiency of the Raynaud type, so propranolol and atenolol are contraindicated. Drugs such as ergotamine preparations can produce cold sensitivity, and should therefore be avoided in patients with Raynaud's disease. Cilostazol is indicated for intermittent claudication but not for Raynaud's disease.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 495-496. 2) Goundry B, Bell L, Langtree M, Moorthy A: Diagnosis and management of Raynaud's phenomenon. BMJ 2012;344:e289.

Item 47

ANSWER: C

The EKG reveals P waves unrelated to the QRS complex, in that the PR interval is variable and random. With atrial fibrillation there is no P wave. Sinus bradycardia has a P wave associated with each QRS complex and a fixed PR interval. With 2:1 AV block there would be two P waves followed by a QRS. Mobitz-type blocks have a consistent PR interval, often with a widened QRS.

Ref: Dubin D: Rapid Interpretation of EKG's, ed 6. Cover Publishing Company, 2000, pp 181-182, 186-189. 2) Goldberger AL, Goldberger ZD, Shvilkin A: Goldberger's Clinical Electrocardiography: A Simplified Approach, ed 8. Elsevier Saunders, 2013, pp 159-169.

Item 48

ANSWER: D

This patient has numerous red flags for elder abuse, including unexplained weight loss, reliance on a caregiver, a disheveled appearance, a pressure ulcer, and bruising in locations that are not typically associated with unintentional trauma from falls. Although the other listed causes of bruising are possible, in this scenario the index of suspicion should be highest for elder abuse.

Ref: Hoover RM, Polson M: Detecting elder abuse and neglect: Assessment and intervention. Am Fam Physician 2014;89(6):453-460.

Item 49

ANSWER: E

This patient most likely has acute compartment syndrome and must be urgently evaluated by an orthopedic surgeon. Typically, compartment pressure can be measured using a needle attached to a manometer, and if the pressure is elevated (usually >40 mm Hg) urgent fasciotomy is necessary to prevent muscle necrosis. If the classic "Five Ps" (pain, paresthesia, pallor, pulselessness, and paralysis) are all present, the outcome will most certainly be bad, even limb-threatening. Early identification with a high index of suspicion and urgent referral for fasciotomy is necessary to prevent tragic results.

Before the classic findings develop, patients will have tenderness out of proportion to the physical appearance of the injury and, most importantly, severe pain in the involved compartment with passive stretching of the involved muscles.

While rest, immobilization, non–weight bearing, and analgesia are all appropriate measures, none of these is sufficient treatment for this urgent problem.

Ref: Sarwark JF (ed): Essentials of Musculoskeletal Care, ed 4. American Academy of Orthopaedic Surgeons, 2011, pp 669-671.

Item 50

ANSWER: A

Untreated hypothyroidism during pregnancy impairs fetal development and increases the risk of spontaneous miscarriage, prematurity, preeclampsia, gestational hypertension, and postpartum hemorrhage. These risks are mitigated by appropriate levothyroxine treatment. Levothyroxine/L-triiodothyroxine combinations and desiccated thyroid preparations have the potential to correct maternal hypothyroidism, but the T_4 level may still be too low to provide the transplacental delivery necessary for optimal fetal health. The most appropriate pregnancy planning advice is to continue the current dosage of levothyroxine with a plan for monthly monitoring of TSH and T_4 during pregnancy, with the expectation that an increase in dosage may be required as the pregnancy progresses.

Ref: Stagnaro-Green A, Abalovich M, Alexander E, et al: Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. Thyroid 2011;21(10):1081-1125.

Item 51

ANSWER: C

Whooping cough has reemerged over the past few years. The initial catarrhal stage is manifested by nonspecific symptoms similar to those of a viral upper respiratory illness. This stage is usually 1–2 weeks in duration, and the patient is highly contagious. The paroxysmal stage is manifested by severe coughing spells that occur in paroxysms and may be followed by the inspiratory whoop (much more likely in children). Post-tussive emesis is another classic sign. There are no characteristic findings on examination other than signs induced by extreme coughing. The CDC recommends both a nasopharyngeal culture and polymerase chain reaction testing to confirm the diagnosis. Serologic testing is useful only in research settings, and direct fluorescent antibody testing is not recommended. Azithromycin should be used as initial therapy, but this is to decrease transmission of the illness and does not improve symptoms.

Ref: Kline JM, Lewis WD, Smith EA, et al: Pertussis: A reemerging infection. Am Fam Physician 2013;88(8):507-514.

Item 52

ANSWER: C

Blood pressure in children should be measured with an appropriate size cuff. Blood pressure standards are based on age, sex, and height, and provide a precise classification of blood pressure according to body size. Blood pressure tables for children now include the 50th, 90th, 95th, and 99th percentiles by age, sex, and height (SOR A).

Ref: Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, p 1534.

Item 53

ANSWER: A

The U.S. Preventive Services Task Force recommends that all men 35 years of age and older be screened for dyslipidemia (evidence rating A). Men who are 20–35 years of age should be screened only if they have cardiovascular risk factors (evidence rating B). Prostate-specific antigen (PSA) testing should not be performed at any age because the harms outweigh the benefits (evidence rating D). Colorectal cancer screening should begin at age 50 for men of average risk (evidence rating A). Abdominal aortic aneurysm (AAA) screening once by ultrasonography is recommended for men age 65–75 with a family history of AAA, and for those who have smoked at least 100 cigarettes in their lifetime (evidence rating B). Testicular examinations, either by self-examination or clinical screening, should not be performed routinely (evidence rating D).

Ref: Heidelbaugh JJ, Tortorello M: The adult well male examination. Am Fam Physician 2012;85(10):964-971.

Item 54

ANSWER: B

Unlike the other conditions listed, Crohn's disease is associated with many extragastrointestinal conditions: erythema nodosum (as with this patient), anemia, inflammatory arthropathies, uveitis, and venous thromboembolism (level of evidence 3).

Ref: Wilkins T, Jarvis K, Patel J: Diagnosis and management of Crohn's disease. Am Fam Physician 2011;84(12):1365-1375.

Item 55

ANSWER: E

While hormonal therapy was initially used to treat postmenopausal vasomotor symptoms, it was also believed to prevent disease. Based on retrospective studies, a decrease in ischemic heart disease and dementia was suspected. The Women's Health Initiative trials, first undertaken in the 1990s, showed that this was unfortunately not the case, and that hormone therapy actually increases the risk for coronary heart disease, stroke, breast cancer, gallbladder disease, dementia, and venous thrombosis, particularly in older women. A decrease in fractures was demonstrated, however, along with some other health benefits, such as a reduced risk of endometrial cancer.

Ref: Manson JE, Chlebowski RT, Stefanick ML, et al: Menopausal hormone therapy and health outcomes during the intervention and extended poststopping phases of the Women's Health Initiative randomized trials. JAMA 2013;310(13):1353-1368.

Item 56

ANSWER: E

When there is a question about the cause of goiter and thyrotoxicosis, the presence of TSH receptor immunoglobulins indicates Graves disease. The prevalence of specific forms of TSH receptor site antibodies can distinguish Graves disease from Hashimoto's disease. Both are autoimmune diseases, but in Graves disease there is a predominance of TSH receptor antibodies. In Hashimoto's disease TSH receptor–blocking antibodies are more predominant. These immunoglobulins tend to disappear with therapy.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp e68-e70.

Item 57

ANSWER: B

The majority of symptoms associated with sports-related concussions resolve within 72 hours of injury. However, some concussions result in prolonged recovery periods. Risk factors associated with a prolonged recovery include headaches lasting 60 hours or more, self-reported fatigue or fogginess, and four or more symptoms at the onset of injury (SOR B). Loss of consciousness and amnesia have not been found to be related to recovery time. Convulsions associated with the injury are benign and do not affect prognosis. Nausea is one of the symptoms of concussion, but by itself is not a risk factor for prolonged recovery.

Ref: Makdissi M, Darby D, Maruff P, et al: Natural history of concussion in sport: Markers of severity and implications for management. Am J Sports Med 2010;38(3):464-471. 2) Scorza KA, Raleigh MF, O'Connor FG: Current concepts in concussion: Evaluation and management. Am Fam Physician 2012;85(2):123-132.

Item 58

ANSWER: C

In patients at intermediate to high risk for deep vein thrombosis, compression ultrasonography is the initial diagnostic test of choice. In low-risk patients, a negative D-dimer has a high enough negative predictive value to essentially rule out deep vein thrombosis. It is not sensitive or specific enough for evaluating intermediate-risk patients. Initiating treatment based on pretest probability would be inappropriate. Impedance plethysmography is not readily available, and contrast venography is too invasive to be used routinely.

Ref: Wilbur J, Shian B: Diagnosis of deep venous thrombosis and pulmonary embolism. Am Fam Physician 2012;86(10):913-919.

Item 59

ANSWER: C

The use of medications for osteoporosis is associated with various side effects, some of which have only recently been recognized. Denosumab and bisphosphonates have similar, albeit low, risks for jaw osteonecrosis. Bisphosphonates should not be used in patients with a creatinine clearance <35 mL/min/1.73 m^2, but denosumab is not cleared by the kidneys and is safe in patients with chronic kidney disease. The use of bisphosphonates for more than 5 years can increase the risk of atypical fractures and a holiday from the drug is recommended after either 3 or 5 years, depending on the drug used.

Ref: Messinger-Rapport BJ, Gammack JK, Thomas DR, Morley JE: Clinical update on nursing home medicine: 2013. J Am Med Dir Assoc 2013;14(12):860-876.

Item 60

ANSWER: B

The most common causes of serious bacterial infection in children 3–36 months of age are pneumonia and urinary tract infection. In children without an obvious source of infection, the urinalysis and culture are key tests in the evaluation. A valid urine sample should be obtained in all children under the age of 2 with a fever of unknown source. The sample should be obtained through catheterization or suprapubic aspiration. If the patient is toilet trained a clean-catch urine sample is acceptable (SOR C). C-reactive protein is currently under investigation for its utility in detecting serious infection in young children. It is thought to have a greater predictive value than WBC counts but is not yet standardized for common use. A CBC with differential is most useful in neonates but is not as helpful in older infants for detecting serious infection. It is recommended for hospitalized patients but not for those managed as outpatients (SOR C).

A chest radiograph is indicated for children with an abnormal respiratory examination or respiratory symptoms. It is also recommended for children older than 1 month of age with a fever $>39°C$ (102°F) and a WBC count $>20{,}000/mm^3$. A lumbar puncture is indicated for infants with meningeal signs such as focal neurologic findings, petechiae, or nuchal rigidity.

Ref: Hamilton JL, John SP: Evaluation of fever in infants and young children. Am Fam Physician 2013;87(4):254-260.

Item 61

ANSWER: E

Hypogonadism is an often underrecognized and undertreated side effect of long-term opioid therapy. It is more often seen in men and in patients receiving larger doses of opioids, including intrathecally. Typical symptoms include decreased libido, erectile dysfunction, amenorrhea, or fatigue.

Constipation is not uncommon in patients on chronic opioid therapy, especially if they are elderly, have limited mobility, or are concurrently using other constipating medications. Sedation can occur in the first few weeks after starting therapy but usually tapers off. Hyperalgesia (not hypoalgesia) and allodynia are other side effects resulting from chronic opioid therapy. Respiratory depression is infrequent (SOR C).

Ref: Reddy RG, Aung T, Karavitaki N, Wass JA: Opioid induced hypogonadism. BMJ 2010;341:c4462.

Item 62

ANSWER: A

The American Society of Echocardiography recommends that physicians NOT order follow-up or serial echocardiograms for surveillance after a finding of trace valvular regurgitation on an initial echocardiogram (SOR C). Trace mitral, tricuspid, and pulmonic regurgitation can be detected in 70%–90% of normal individuals and has no adverse clinical implications. The clinical significance of a small amount of aortic regurgitation with an otherwise normal echocardiographic study is unknown.

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). J Am Coll Cardiol 2008;52(13):e1-e142. 2) American College of Cardiology Foundation Appropriate Use Criteria Task Force; American Society of Echocardiography; American Heart Association, et al: ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance American College of Chest Physicians. J Am Soc Echocardiogr 2011;24(3):229-267. 3) American Society of Echocardiography: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 63

ANSWER: E

This patient's history, along with the bulge/impulse detected on physical examination when he strained or coughed, is most consistent with the diagnosis of inguinal hernia. A "sports hernia" is not a true hernia, but rather a tearing of tissue fibers. The patient often presents with symptoms consistent with a hernia, but without evidence on physical examination. Pain along the symphysis pubis would suggest osteitis pubis, and pain along the adductor tendons would suggest adductor tendinopathy. Ilioinguinal nerve entrapment syndrome is an abdominal muscular pain syndrome characterized by the clinical triad of muscle-type iliac fossa pain with a characteristic radiation pattern, altered sensory perception in the ilioinguinal nerve cutaneous innervation area, and a well-circumscribed trigger point medial to and below the anterosuperior iliac spine.

Ref: LeBlanc KE, LeBlanc LL, LeBlanc KA: Inguinal hernias: Diagnosis and management. Am Fam Physician 2013;87(12):844-848.

Item 64

ANSWER: B

Running injuries are primarily caused by overuse due to training errors. Runners should be instructed to increase their mileage gradually. A stress fracture causes localized tenderness and swelling in superficial bones, and the pain can be reproduced by having the patient jump on the affected leg. Plantar fasciitis causes burning pain in the heel and there is tenderness of the plantar fascia where it inserts onto the medial tubercle of the calcaneus.

Ref: Hatch RL, Alsobrook JA, Clugston JR: Diagnosis and management of metatarsal fractures. Am Fam Physician 2007;76(6):817-826. 2) Miller MD, Thompson SR (eds): DeLee & Drez's Orthopaedic Sports Medicine: Principles and Practice, ed 4. Elsevier Saunders, 2014, pp 160-165.

Item 65

ANSWER: D

This patient presents with a typical case of mild to moderate croup. This is a viral infection that results in swelling in the larynx. It rarely is severe enough to cause respiratory collapse or require intubation and must be differentiated from more severe conditions such as epiglottitis, retropharyngeal abscess, or pneumonia. There is no reason to treat this viral infection with an antibiotic. The condition is usually benign and self-limiting, with the worst symptoms occurring at night. Cool and/or humidified air has traditionally been recommended, but studies have not confirmed any significant benefit from these interventions. Since this child is not in respiratory distress and oxygenation is normal, supplemental oxygen therapy is not indicated. Studies have confirmed the benefits of treating croup with a single dose of either an oral or intramuscular corticosteroid. Specifically, dexamethasone is recommended due to its 72-hour length of effect. Inhaled racemic epinephrine has been shown to reduce the need for intubation in cases of moderate to severe croup. Albuterol, however, is not indicated.

Ref: Zoorob R, Sidani M, Murray J: Croup: An overview. Am Fam Physician 2011;83(9):1067-1073.

Item 66

ANSWER: C

The Rome criteria define constipation as the presence of two or more of the following: straining on defecation, hard stools, incomplete evacuation, or less than three bowel movements per week. This patient has multiple symptoms on this list. The presence of watery bowel movements does not rule out the diagnosis of constipation, as it is common for liquid stool to pass an obstructive source.

Ref: Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine: A Comprehensive Study Guide, ed 7. McGraw-Hill, 2011, pp 541-543.

Item 67

ANSWER: E

In patients with acute respiratory distress syndrome (ARDS), starting mechanical ventilation with lower tidal volumes of 6 mL/kg is superior to starting with traditional tidal volumes of 10–14 mL/kg (SOR A). Conservative fluid therapy is recommended in patients with ARDS, as this is associated with a decrease in the number of days on the ventilator and in the intensive-care unit (SOR B). Pulmonary artery catheters are not recommended for routine management of ARDS (SOR A). Surfactant therapy does not improve mortality in adults with ARDS (SOR A), and antibiotics are not an effective treatment.

Ref: Saguil A, Fargo M: Acute respiratory distress syndrome: Diagnosis and management. Am Fam Physician 2012;85(4):352-358.

Item 68

ANSWER: C

According to The Joint Commission's sentinel event program, communication problems are the most common root cause of serious medical errors. Strategies such as the implementation of structured and standardized handoffs are an example of improving communication among members of the health care team, thereby helping to reduce errors.

Ref: Frequency of communication problems among Joint Commission sentinel events. The Joint Commission, 2011.

Item 69

ANSWER: B

In a corneal light reflex test, the patient's attention is attracted to a target while a light is directed at the eyes. In normally aligned eyes the light reflex will be located in the center of each pupil. In patients with esotropia the reflex will be over the lateral portion of the iris in the affected eye. In exotropia the light reflex is over the medial iris, in hypertropia it is over the inferior iris, and in hypotropia it is over the superior iris. The finding observed in this child, hypertropia, will occur with a congenital palsy involving the superior oblique muscle, which is innervated by the fourth cranial nerve.

Ref: Bell AL, Rodes ME, Collier Kellar L: Childhood eye examination. Am Fam Physician 2013;88(4):241-248. 2) Yanoff M, Duker JS (eds): Ophthalmology, ed 4. Elsevier Saunders, 2014, pp 1228-1229.

Item 70

ANSWER: B

This patient likely has severe preeclampsia based on her elevated blood pressure with 4+ protein on her urinalysis. Patients with severe preeclampsia near term should be placed on magnesium sulfate to prevent seizures, and labor should be induced immediately. An urgent cesarean section is not necessary. Corticosteroids have not been shown to improve neonatal outcomes when given after 34 weeks gestation. Elevated blood pressures can be managed with hydralazine and labetalol. Normalizing blood pressure is not recommended, but these drugs should be used when blood pressure is over 160/105 mm Hg.

Ref: American College of Obstetricians and Gynecologists: Diagnosis and Management of Preeclampsia and Eclampsia. ACOG Practice Bulletin no 33, 2002 (reaffirmed 2012).

Item 71

ANSWER: E

Syncope with exercise is a manifestation of organic heart disease in which cardiac output is fixed and does not rise (or even fall) with exertion. Syncope, commonly occurring with exertion, is reported in up to 42% of patients with severe aortic stenosis. Vasovagal syncope is associated with unpleasant stimuli or physiologic conditions, including sights, sounds, smells, sudden pain, sustained upright posture, heat, hunger, and acute blood loss. Transient ischemic attacks are not related to exertion. Orthostatic hypotension is associated with changing from a sitting or lying position to an upright position. Atrial myxoma is associated with syncope related to changes in position, such as bending, lying down from a seated position, or turning over in bed.

Ref: Task Force for the Diagnosis and Management of Syncope; European Society of Cardiology (ESC); European Heart Rhythm Association (EHRA); Heart Failure Association (HFA); Heart Rhythm Society (HRS); Moya A, Sutton R, Ammirati F, et al: Guidelines for the diagnosis and management of syncope (version 2009). Eur Heart J 2009;30(21):2631-2371. 2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 337-339.

Item 72

ANSWER: C

This patient has red flag findings of older age and weight loss with chronic vomiting and is at risk for a gastrointestinal malignancy. He should be referred for esophagogastroduodenoscopy (EGD). Abdominal ultrasonography or radiographs would not be necessary at this time. A proton pump inhibitor or H_2-blocker can be prescribed but should not delay referral for EGD.

Ref: Anderson WD 3rd, Strayer SM: Evaluation of nausea and vomiting in adults: A case-based approach. Am Fam Physician 2013;88(6):371-379.

Item 73

ANSWER: D

Although high-dose amoxicillin (90 mg/kg/day) is recommended as the antibiotic of choice for acute otitis media (AOM) in the nonallergic patient, amoxicillin/clavulanate is recommended if a child has received antibiotic therapy in the previous 30 days. Prophylactic antibiotics are not recommended, as harms outweigh benefits. Tympanostomy tubes are an option if a child has had three episodes of AOM in the past 6 months or four episodes in the past year with at least one episode in the past 6 months.

Ref: Lieberthal AS, Carroll AE, Chonmaitree T, et al: The diagnosis and management of acute otitis media. Pediatrics 2013;131(3):e964-e999.

Item 74

ANSWER: A

In areas where there is at least a 20% rate of tick infection, 200 mg of doxycycline within 72 hours of tick removal is appropriate as prophylaxis for Lyme disease if the tick is engorged or is suspected to have been attached for at least 36 hours. The Northeast and Upper Midwest are the most endemic areas. The other oral antibiotics listed are appropriate for cases of acute erythema migrans and suspected infection. Watchful waiting is not recommended, and there is no evidence for treatment with topical antibiotics alone (SOR C).

Ref: Wright WF, Riedel DJ, Talwani R, Gilliam BL: Diagnosis and management of Lyme disease. Am Fam Physician 2012;85(11):1086-1093.

Item 75

ANSWER: D

Subacute granulomatous thyroiditis is the most common cause of thyroid pain. Free T_4 is elevated early in the disease, as it is in Graves disease; however, later in the disease T_4 becomes depressed and then returns to normal as the disease resolves. Pretibial myxedema, exophthalmos, and a thyroid thrill or bruit can all be found in Graves disease, but are not associated with subacute granulomatous thyroiditis. Multiple nodules on ultrasonography suggests multinodular goiter rather than subacute granulomatous thyroiditis. Patients with subacute granulomatous thyroiditis will have a low radioactive iodine uptake (RAIU) at 24 hours, but patients with Graves disease will have an elevated RAIU (SOR C).

Ref: Bindra A, Braunstein GD: Thyroiditis. Am Fam Physician 2006;73(10):1769-1776. 2) Melmed S, Polonsky KS, Larsen PR, Kronenberg HM (eds): Williams Textbook of Endocrinology, ed 12. Elsevier Saunders, 2011, pp 397-398.

Item 76

ANSWER: A

Given the information about this patient, such as her relatively recent diagnosis, her age, and her lack of macro- or microvascular complications, a more strict hemoglobin A_{1c} goal is indicated. There are several oral and injectable medicines that are reasonable choices in this case. Exenatide is an injectable GLP-1 agonist that is associated with weight loss. Pioglitazone is also effective but is associated with fluid retention rather than weight loss. Sitagliptin is a dipeptidyl peptidase IV (DPP-IV) inhibitor that may be a reasonable option in this case, but is not associated with weight loss. Insulin, either basal only, mixed, or basal-bolus regimens, may also be the best option for the patient described, but it does cause weight gain. Cost is another major consideration in treatment decisions, but more information would be needed to address this issue.

Ref: Ismail-Beigi F: Glycemic management of type 2 diabetes mellitus. N Engl J Med 2012;366(14):1319-1327.

Item 77

ANSWER: E

Many types of exercise programs are beneficial for older adults, including simply walking for 30 minutes three times a week. However, a meta-analysis of progressive resistance training programs in nursing homes showed that there were significant improvements in muscle strength, chair-to-stand time, stair climbing, gait speed, and balance. This is seen even in those with advanced age, disabilities, chronic diseases, or extremely sedentary lifestyles.

Ref: Valenzuela T: Efficacy of progressive resistance training interventions in older adults in nursing homes: A systematic review. J Am Med Dir Assoc 2012;13(5):418-428. 2) Messinger-Rapport BJ, Gammack JK, Thomas DR, Morley JE: Clinical update on nursing home medicine: 2013. J Am Med Dir Assoc 2013;14(12):860-876.

Item 78

ANSWER: E

Acute diverticulitis can be treated using oral antibiotics on an outpatient basis in 90% of cases. In fact, there is good evidence that those with uncomplicated diverticulitis (no signs of abscess, fistula, phlegmon, obstruction, bleeding, or perforation) can be treated without the use of antibiotics, using only bowel rest and close follow-up. Among patients who require hospitalization, it is estimated that $<10\%$ of cases will require surgical intervention. Thus, the majority of patients hospitalized with this condition, even those with complicated diverticulitis, will respond well to bowel rest and intravenous antibiotics.

Indications for surgery include generalized peritonitis, unconfined perforation, uncontrolled sepsis, an undrainable abscess, and failure of conservative management. CT-guided percutaneous drainage of an accessible abscess is a well-proven treatment to avoid the use of open surgery. Prevention of future episodes of diverticulitis increasingly revolves around the use of daily oral medications. Some experts recommend considering surgery to remove a section of bowel after a patient's third admission for diverticulitis.

Ref: Jacobs DO: Diverticulitis. N Engl J Med 2007;357(20):2057-2066. 2) Wilkins T, Embry K, George R: Diagnosis and management of acute diverticulitis. Am Fam Physician 2013;87(9):612-620.

Item 79

ANSWER: D

SSRIs are the most commonly used medications for postpartum depression. They have fewer side effects and are considered safer than tricyclic antidepressants, especially in depressed women who may be at increased risk for medication overdose (SOR C). In one study, infant serum levels of sertraline and paroxetine were undetectable. It is also recommended that a woman with postpartum depression be started on a medication that she had taken previously with a good response, unless there is evidence of potential harm to her infant (SOR C).

Tricyclic antidepressants are excreted into breast milk and there is some concern regarding potential toxicity to the newborn. Phenytoin, diazepam, and zolpidem are not antidepressants. Phenytoin and diazepam are Category D for use in pregnant women. Diazepam is potentially toxic to infants and can accumulate in breastfed infants, and it is not recommended for lactating women (SOR C). Zolpidem is category B in pregnancy and probably acceptable for use in lactating women if clinically indicated.

Ref: Weissman AM, Levy BT, Hartz AJ, et al: Pooled analysis of antidepressant levels in lactating mothers, breast milk, and nursing infants. Am J Psychiatry 2004;161(6):1066-1078. 2) ACOG Committee on Practice Bulletins—Obstetrics: ACOG Practice Bulletin: Clinical management guidelines for obstetrician-gynecologists number 92, April 2008 (replaces practice bulletin number 87, November 2007). Use of psychiatric medications during pregnancy and lactation. Obstet Gynecol 2008;111(4):1001-1020. 3) Dennis CL, Allen K: Interventions (other than pharmacological, psychosocial or psychological) for treating antenatal depression. Cochrane Database Syst Rev 2008;(4):CD006795. 4) Hirst KP, Moutier CY: Postpartum major depression. Am Fam Physician 2010;82(8):926-933.

Item 80

ANSWER: A

Topical corticosteroids are the first-line treatment for atopic dermatitis flare-ups. Topical calcineuron inhibitors such as pimecrolimus are a second-line therapy, but carry a warning of a possible link to lymphomas and skin malignancies and are not recommended for children under 2 years of age. Oral antihistamines are not effective for the pruritus associated with atopic dermatitis. Probiotic use is not supported by available evidence.

Ref: Berke R, Singh A, Guralnick M: Atopic dermatitis: An overview. Am Fam Physician 2012;86(1):35-42.

Item 81

ANSWER: B

Lichen planus is an idiopathic inflammatory disease affecting the skin and oral mucosa. The characteristic violaceous, polygonal papules may be intensely itchy. There is a significant association between lichen planus and hepatitis C virus infection.

Ref: Le Cleach L, Chosidow O: Lichen planus. N Engl J Med 2012;366(8):723-732.

Item 82

ANSWER: C

The American Geriatrics Society consensus report for considering treatment goals for glycemia recommends a hemoglobin A_{1c} goal of $<8.5\%$ for individuals with very complex health problems or poor health. This includes individuals in long-term care and those with end-stage chronic illnesses, moderate to severe cognitive impairment, or more than two activity of daily living (ADL) dependencies. A hemoglobin A_{1c} $<8.5\%$ equates to an estimated average glucose level of approximately 200 mg/dL. Looser glycemic targets than this may expose patients to acute risks from glycosuria, dehydration, hyperglycemic hyperosmolar syndrome, and poor wound healing.

Ref: Kirkman MS, Briscoe VJ, Clark N, et al: Diabetes in older adults: A consensus report. J Am Geriatr Soc 2012;60(12):2342-2356.

Item 83

ANSWER: C

The likelihood ratio (LR) is the ratio of the probability of a specific test result in people who have a particular disease to the probability in people who do not. LRs correspond to the clinical impression of how well a test rules in or rules out a given disease. A test with an LR of 1.0 indicates that it does not change the probability of disease. The higher above 1 the LR is, the more likely it is that the disease is present (an LR >10 is considered good). Conversely, the lower the LR is below 1, the more likely it is that the disease is not present (an LR <0.1 is considered good). Likelihood ratios are alternative statistics for summarizing diagnostic accuracy, and have several particularly powerful properties that make them more useful clinically than other statistics.

Ref: Deeks JJ, Altman DG: Diagnostic tests 4: Likelihood ratios. BMJ 2004;329(7458):168–169. 2) EBM glossary: Terms used in evidence-based medicine. Am Fam Physician website. http://www.aafp.org/journals/afp/authors/ebm-toolkit/glossary.html

Item 84

ANSWER: B

The most common inhibitor discovered during the evaluation of an elevated aPTT is an antiphospholipid antibody. Antiphospholipid antibody syndrome is characterized by venous or arterial thromboembolism and recurrent spontaneous abortion, often in the second trimester, due to placental infarction. Protein C deficiency is associated with recurrent deep vein thrombophlebitis, but does not cause elevation of aPTT. Hemophilia A is associated with an elevated aPTT which corrects with the addition of normal plasma. In chronic liver disease one would expect an elevation of the prothrombin time also. Von Willebrand disease is not associated with thrombophlebitis or recurrent abortion.

Ref: Miyakis S, Lockshin MD, Atsumi T, et al: International Consensus Statement on an update of the classification criteria for definite antiphospholipid syndrome (APS). J Thromb Haemost 2006;4(2):295-306. 2) Pengo V, Ruffatti A, Iliceto S: The diagnosis of the antiphospholipid syndrome. Pathophysiol Haemost Thromb 2006;35(1-2):175-180. 3) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 2736-2737.

Item 85

ANSWER: D

The U.S. Preventive Services Task Force recommends that asymptomatic adults with sustained blood pressure (treated or untreated) $>135/80$ mm Hg be screened for type 2 diabetes mellitus. Since this patient was screened 1 year ago for cervical cancer, and has no history of an abnormality, she does not require cytology again for another 2 years. If her Papanicolaou test 1 year ago had been combined with HPV testing the rescreening interval could be extended to 5 years if both were negative. Routine screening for ovarian cancer with bimanual examination, transvaginal ultrasonography, or CA-125 testing is not recommended. Chlamydia screening is recommended for high-risk sexually active women over 25 and for all sexually active women age younger than 25. Colorectal cancer screening should begin at age 50.

Ref: Riley M, Dobson M, Jones E, Kirst N: Health maintenance in women. Am Fam Physician 2013;87(1):30-37.

Item 86

ANSWER: A

Developmental dysplasia of the hip encompasses both subluxation and dislocation of the newborn hip, as well as anatomic abnormalities. It is more common in firstborns, females, breech presentations, oligohydramnios, and patients with a family history of developmental dysplasia.

Experts are divided as to whether hip subluxation can be merely observed during the newborn period, but if there is any question of a hip problem on examination by 2 weeks of age, the recommendation is to refer to a specialist for further testing and treatment. Studies show that these problems disappear by 1 week of age in 60% of cases, and by 2 months of age in 90% of cases. Triple diapering should not be used because it puts the hip joint in the wrong position and may aggravate the problem. Plain radiographs may be helpful after 4–6 months of age, but prior to that time the ossification centers are too immature to be seen.

Because the condition can be difficult to diagnose, and can result in significant problems, the current recommendation is to treat all children with developmental dysplasia of the hip. Closed reduction and immobilization in a Pavlik harness, with ultrasonography of the hip to ensure proper positioning, is the treatment of choice until 6 months of age. The American Academy of Pediatrics recommends ultrasound screening at 6 weeks for breech females, breech males (optional), and females with a positive family history of developmental dysplasia of the hip. Other countries have recommended universal screening, but a review of the literature has not shown that the benefits of early diagnosis through universal screening outweigh the risks and potential problems of overtreating.

Ref: Storer SK, Skaggs DL: Developmental dysplasia of the hip. Am Fam Physician 2006;74(8):1310-1316. 2) Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, pp 2356-2360.

Item 87

ANSWER: B

Fentanyl and methadone are the preferred opioids for use in patients with end-stage renal disease (SOR C). Fentanyl is metabolized in the liver and has no active metabolites. All of the other listed opioid medications have active metabolites that can accumulate in patients with renal failure, leading to serious side effects. These agents should be avoided in patients on dialysis.

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 88

ANSWER: B

Clostridium difficile infection (CDI) may be transmitted by direct contact with an infected patient, by contact with a contaminated environment, or by contact with a health care worker with transient hand colonization. Effective prevention efforts are essential to limit the spread from one patient to another in the hospital and other health care settings. Although alcohol-based hand antiseptics have been shown to increase compliance with hand hygiene and reduce the incidence of MRSA and VRE infections, alcohol does not kill the spore form of C. difficile and the use of these antiseptics does not reduce the incidence of CDI. There is insufficient data to support the widespread use of probiotics for prevention of CDI, and there is a potential risk of bloodstream infection with their use.

Health care workers rarely become colonized with C. difficile, and screening them has not been shown to affect nosocomial transmission rates. Handwashing with soap and water removes C. difficile from the hands of health care workers and remains the cornerstone of prevention efforts. Additional contact precautions such as the use of gloves and gowns may also be helpful. CDI is not transmitted by the respiratory route, so the use of respiratory isolation techniques is not helpful.

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. 2) Winslow BT, Onysko M, Thompson KA, et al: Common questions about Clostridium difficile infection. Am Fam Physician 2014;89(6):437-442.

Item 89

ANSWER: E

Norepinephrine is considered to be the vasopressor of choice in this situation. It has mainly α-adrenergic effects with some β-adrenergic effects as well. While α-adrenergic agents increase mean arterial pressure, they decrease cardiac output. Norepinephrine's β-adrenergic properties counteract the decrease in cardiac output, so there is an increase in blood pressure with little change in pulse rate or cardiac output.

Vasopressin may be useful in patients with cardiac arrest and ventricular fibrillation and may further improve hypotension when used with norepinephrine. Dobutamine is the inotropic agent of choice but has little effect on blood pressure. Epinephrine can increase the incidence of arrhythmias when compared with norepinephrine. Dopamine also increases arrhythmias when compared with norepinephrine and is associated with an increased 28-day death rate.

Ref: Vincent JL, De Backer D: Circulatory shock. N Engl J Med 2013;369(18):1726-1734.

Item 90

ANSWER: A

A diffusion capacity test assesses how well a tracer gas in inspired air can cross from the air into the blood. The diffusion capacity provides a general assessment of the air-blood interface. Reduced values are seen with severe interstitial fibrosis, or when the capillary surface has been compromised by vascular obstruction (pulmonary embolism) or is destroyed by emphysema. Chronic pulmonary embolism causes a low diffusing capacity of the lung for carbon monoxide (DLCO) with normal pulmonary function tests. Emphysema causes a low DLCO and an obstructive pattern on pulmonary function testing (PFT). Interstitial lung disease and hypersensitivity pneumonitis both cause a low DLCO with a restrictive pattern of PFTs. Patients with asthma may have an increased DLCO with an obstructive pattern, with reversibility after bronchodilator administration.

Ref: Nilsson KR Jr, Piccini JP: The Osler Medical Handbook, ed 2. Saunders Elsevier, 2006, pp 858-864. 2) Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 524-527.

Item 91

ANSWER: D

In 2010, opioid analgesics were implicated in 75% of pharmaceutical-related overdose deaths. Benzodiazepines were involved in 30% of these opioid analgesic–related deaths. Conversely, opioids were a factor in 77% of pharmaceutical overdose deaths that involved benzodiazepines.

Antidepressants are involved in less than half as many opioid deaths as benzodiazepines. Antipsychotics, acetaminophen, and muscle relaxants are implicated in opioid overdose deaths with far less frequency than benzodiazepines.

Ref: Jones CM, Mack KA, Paulozzi LJ: Pharmaceutical overdose deaths, United States, 2010. JAMA 2013;309(7):657-659.

Item 92

ANSWER: C

Muscle strength is scored on a scale of 0 to 5. The inability to contract a muscle is scored as 0. Contraction without movement constitutes grade 1 strength. Movement with the effect of gravity neutralized is grade 2 strength, while movement against gravity only is grade 3 strength. Movement against gravity plus some additional resistance indicates grade 4 strength. Normal, or grade 5, strength is demonstrated by movement against substantial resistance.

Ref: Ropper AH, Samuels MA, Klein JP: Adams and Victor's Principles of Neurology, ed 10. McGraw-Hill, 2014, p 1410.

Item 93

ANSWER: C

Oral antibiotics are effective for the treatment of moderate to severe acne (SOR A). Combined treatment with benzoyl peroxide is recommended to reduce the risk of bacterial resistance (SOR C). Amoxicillin and ciprofloxacin are not recommended for acne treatment. Intralesional corticosteroid therapies have been tried for acne treatment, but long-term use of oral corticosteroids is not recommended.

Ref: Strauss JS, Krowchuk DP, Leyden JJ, et al: Guidelines of care for acne vulgaris management. J Am Acad Dermatol 2007;56(4):651-663. 2) Thiboutot D, Gollnick H, Bettoli V, et al: New insights into the management of acne: An update from the Global Alliance to Improve Outcomes in Acne group. J Am Acad Dermatol 2009;60(5 Suppl):S1-S50. 3) Titus S, Hodge J: Diagnosis and treatment of acne. Am Fam Physician 2012;86(8):734-740.

Item 94

ANSWER: C

The U.S. Preventive Services Task Force recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults 55–80 years of age who have a 30-pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have lung surgery (B recommendation).

The risk of lung cancer increases with age and cumulative exposure to tobacco smoke and decreases with time since quitting smoking. The best evidence comes from the National Lung Screening Trial, which enrolled adults age 55–74 who had at least a 30-pack-year smoking history and were current smokers or had quit in the past 15 years. Screening with LDCT resulted in a 20% reduction in lung-cancer mortality among participants. Stratification of participants according to lung cancer risk showed that screening with LDCT prevented the greatest number of deaths from lung cancer among participants with the highest risk and prevented few deaths in the lowest-risk groups. Smoking cessation remains the most effective way to decrease the mortality and morbidity associated with lung cancer, however.

Ref: Kovalchik SA, Tammemagi M, Berg CD, et al: Targeting of low-dose CT screening according to the risk of lung-cancer death. N Engl J Med 2013;369(3):245-254.

Item 95

ANSWER: D

This patient suffers from cluster headaches. Both verapamil and lithium are the mainstays of treatment for chronic cluster headaches, but of the options listed, only verapamil is indicated for the prevention of cluster headaches, and it is actually the first-line prophylactic agent (SOR A). Oxygen and sumatriptan are first-line abortive therapies for cluster headaches (SOR A).

Ref: Weaver-Agostoni J: Cluster headache. Am Fam Physician 2013;88(2):122-128.

Item 96

ANSWER: A

This patient is showing signs of delirium, which is common in hospice patients. Delirium should be considered in anyone with disturbances of cognitive function, altered attention, fluctuating consciousness, or acute agitation. The mainstay of management is the diagnosis and treatment of any conditions that may cause delirium. Medications that may cause delirium should be discontinued or reduced if possible. Antipsychotic medications are the drug of choice to improve delirium. Central nervous system depressants such as benzodiazepines and barbiturates should be avoided because they can make delirium worse. Nortriptyline has anticholinergic side effects and can also cause delirium. Mirtazapine would not be helpful for treating delirium.

Ref: Walsh D, Caraceni AT, Fainsinger R, et al (eds): Palliative Medicine. Saunders Elsevier, 2008, pp 860-865. 2) Rosenberg M, Lamba S, Misra S: Palliative medicine and geriatric emergency care: Challenges, opportunities, and basic principles. Clin Geriatr Med 2013;29(1):1-29.

Item 97

ANSWER: B

Respiratory syncytial virus (RSV) bronchiolitis is responsible for approximately 2.1 million health care encounters annually in the United States. The child in this case has a typical presentation of RSV bronchiolitis. The diagnosis can be made clinically, although specific testing for RSV is often used in the hospital setting to segregate RSV-infected patients from others. Management is primarily supportive, especially including maintenance of hydration and oxygenation. Bronchodilators, corticosteroids, and antiviral agents do not have a significant impact on symptoms or the disease course. Ribavirin is not recommended for routine use due to its expense, conflicting data on effectiveness, and potential toxicity to exposed health care workers. Antibiotics are of no benefit in the absence of bacterial superinfection.

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

Item 98

ANSWER: C

Mesenteric ischemia presents with pain disproportionate to the findings on examination, often with nausea, vomiting, or diarrhea. Air within the wall of dilated loops of small bowel (pneumatosis intestinalis) and evidence of acidosis also suggest bowel ischemia. Cholangitis most likely would be associated with a more substantial elevation of the amylase and/or lipase levels, as well as elevated bilirubin and/or alkaline phosphatase levels. Pancreatitis would also be associated with higher amylase and/or lipase levels.

Acute appendicitis often has a vague presentation in older patients, presenting without fever and not localizing to the right lower quadrant as it does in younger patients. However, the leukocytosis is usually not as dramatic as in this case, there is usually no elevation of the amylase or lipase levels, and imaging does not show air within the small bowel.

Ref: Lyon C, Clark DC: Diagnosis of acute abdominal pain in older patients. Am Fam Physician 2006;74(9):1537-1544. 2) Cudnik MT, Darbha S, Jones J, et al: The diagnosis of acute mesenteric ischemia: A systematic review and meta-analysis. Acad Emerg Med 2013;20(11):1087-1100.

Item 99

ANSWER: D

All of the drugs listed are used to treat motor symptoms in patients with Parkinson's disease. However, the best evidence supports the use of carbidopa/levodopa, non-ergot dopamine agonists such as pramipexole or ropinirole, or monoamine oxidase-B inhibitors such as selegiline or rasagiline for initial management of patients with early disease (SOR A).

Ref: Gazewood JD, Richards DR, Clebak K: Parkinson disease: An update. Am Fam Physician 2013;87(4):267-273.

Item 100

ANSWER: B

A helpful guideline for assessing normal growth of a full-term healthy infant is that birth weight should be regained within 14 days. Other useful guidelines for healthy term infants include an average weight gain of 30 grams (1 oz) per day for the first month of life and doubling of birth weight between 4 and 5 months of age.

Ref: Kliegman RM, Stanton BF, Geme JW III, et al (eds): Nelson Textbook of Pediatrics, ed 19. Elsevier Saunders, 2011, p 27.

Item 101

ANSWER: B

Medical conditions that decrease responsiveness to warfarin and reduce the INR include hypothyroidism, visceral carcinoma, increased vitamin K intake, diabetes mellitus, and hyperlipidemia. Conditions that increase responsiveness to warfarin, the INR, and the risk of bleeding include vitamin K deficiency caused by decreased dietary intake, malabsorption, scurvy, malnutrition, cachexia, small body size, hepatic dysfunction, moderate to severe renal impairment, hypermetabolic states, fever, hyperthyroidism, infectious disease, heart failure, and biliary obstruction (SOR B, SOR C).

Ref: Wigle P, Hein B, Bloomfield HE, et al: Updated guidelines on outpatient anticoagulation. Am Fam Physician 2013;87(8):556-566. 2) McEvoy GK (ed): AHFS Drug Information 2013. Warfarin Sodium Class: 20:12.04.08 Coumarin Derivatives; CAS Number: 129-06-6. American Society of Health-System Pharmacists, 2013.

Item 102

ANSWER: E

The sulfonylureas are the oral hypoglycemic agents most likely to cause hypoglycemia, with glyburide more likely to cause low glucose levels than glipizide, due to its longer half-life. The use of these agents should be rare in elderly patients with diabetes mellitus.

Ref: Kirkman MS, Briscoe VJ, Clark N, et al: Diabetes in older adults: A consensus report. J Am Geriatr Soc 2012;60(12):2342-2356.

Item 103

ANSWER: C

Rivaroxaban is used to prevent stroke in nonvalvular atrial fibrillation, but has also recently been approved for prevention of deep-vein thrombosis and pulmonary embolism after hip or knee replacement surgery. In patients with known deep-vein thrombosis or pulmonary embolism, rivaroxaban can be taken at a dosage of 15 mg twice daily for 3 weeks followed by 20 mg daily for at least 3 months. Neither aspirin nor clopidogrel is indicated. Subcutaneous heparin every 12 hours is not a therapeutic dosage and would be difficult to manage in a home environment. Intravenous thrombolytic therapy may be appropriate in the setting of a large pulmonary embolus, but it would be contraindicated in this case because of the patient's recent surgery.

Ref: Erlich DR: Rivaroxaban (Xarelto) for prevention of thromboembolic events. Am Fam Physician 2012;86(8):768-770. 2) EINSTEIN–PE Investigators, Büller HR, Prins MH, Lensin AW, et al: Oral rivaroxaban for the treatment of symptomatic pulmonary embolism. N Engl J Med 2012;366(14):1287-1297. 3) Graber MA, Dachs R, Endres J: Is rivaroxaban noninferior to standard warfarin therapy in preventing recurrent PE and DVT? Am Fam Physician 2013;87(12):872-873.

Item 104

ANSWER: E

Most Hispanic immigrants have received the bacille Calmette-Guérin (BCG) vaccine. Although past practice has been to interpret skin test results without regard to BCG status, false-positive tests in this population are common. Interferon-γ release assays are preferred to tuberculin skin testing in immigrants who have been vaccinated with BCG.

Ref: Juckett G: Caring for Latino patients. Am Fam Physician 2013;87(1):48-54.

Item 105

ANSWER: B

Among the constellation of history and physical findings that can be found in patients with heart failure, none provides a proof-positive diagnosis alone, as most are found in other disease states as well. Each of the options listed raises the possibility of heart failure but the only one that has a specificity $>90\%$ is the third heart sound, which is 99% specific for the diagnosis of heart failure. Other findings with $>90\%$ sensitivity include a displaced point of maximal impulse, interstitial edema or venous congestion on a chest radiograph, jugular vein distention, and hepatojugular reflux. The other options listed here have specificities for heart failure that fall within the range of 65%–80%.

Ref: King M, Kingery J, Casey B: Diagnosis and evaluation of heart failure. Am Fam Physician 2012;85(12):1161-1168.

Item 106

ANSWER: C

Fractures in children can be different from those in adults for several reasons, including the elasticity of immature bone, the possibility of child abuse, and the presence of growth plates. This radiograph shows a fracture from the growth plate through the metaphysis, known as a Salter-Harris type II fracture. Approximately 6%–7% of such fractures will cause a restriction of growth.

The Salter-Harris classification system was developed to classify five types of fractures into the growth plate and can be used to estimate the risk of growth restriction. Type I fractures disrupt the physis only, type III fractures are intra-articular fractures through the epiphysis into the physis, and type IV fractures cross the epiphysis, physis, and metaphysis. Type V fractures involve a compression or crush injury of the physis. The higher the classification, the greater the risk of complications.

Ref: Rakel RE, Rakel DP (eds): Textbook of Family Medicine, ed 8. Elsevier Saunders, 2011, pp 601-602.

Item 107

ANSWER: B

Unstable angina patients at high risk include those with at least one of the following:

- Angina at rest with dynamic ST-segment changes ≥1 mm
- Angina with hypotension
- Angina with a new or worsening mitral regurgitation murmur
- Angina with an S_3 or new or worsening crackles
- Prolonged (>20 min) anginal pain at rest
- Pulmonary edema most likely related to ischemia

Ref: Devitt M: Diagnosis of stable ischemic heart disease: Recommendations from the ACP. Am Fam Physician 2013;88(7):469-470.

Item 108

ANSWER: D

The presence of a solitary enlarged left supraclavicular lymph node (Virchow's node) is associated with a gastrointestinal system malignancy. When combined with painless jaundice and a palpable nontender gallbladder (Courvoisier's sign), pancreatic cancer is the most likely diagnosis.

A pancreatic pseudocyst develops after repeated bouts of pancreatitis and is not directly associated with jaundice. Biliary cirrhosis and hepatocellular carcinoma typically present with pain, fatigue, malaise, hepatomegaly, jaundice, and eventually ascites. The jaundice of biliary cirrhosis is generally accompanied by severe pruritus. In neither condition is a palpably enlarged gallbladder present. Ascending cholangitis presents with a high fever, right upper quadrant pain, and an overall toxic, septic picture, often accompanied by delirium and rigors.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 786-787.

Item 109

ANSWER: C

Medical hyperbaric oxygen is considered a reimbursable treatment option by many insurers for a long list of diagnoses. The list of conditions shown to benefit from hyperbaric oxygen is a much shorter one, however, and includes decompression sickness and wounds caused by crush injuries. Hyperbaric oxygen treatment has been shown to improve diabetic foot ulcers in the short term but studies have so far failed to prove long-term benefit.

Ref: Gill AL, Bell CN: Hyperbaric oxygen: Its uses, mechanisms of action and outcomes. QJM 2004;97(7):385-395. 2) Xiao Y, Wang J, Jiang S, Luo H: Hyperbaric oxygen therapy for vascular dementia. Cochrane Database Syst Rev 2012;(7):CD009425. 3) Bennett MH, Stanford RE, Turner R: Hyperbaric oxygen therapy for promoting fracture healing and treating fracture non-union. Cochrane Database Syst Rev 2012;(11):CD004712. 4) Bennett MH, Kertesz T, Perleth M, et al: Hyperbaric oxygen for idiopathic sudden sensorineural hearing loss and tinnitus. Cochrane Database Syst Rev 2012;(10):CD004739. 5) Eskes A, Vermeulen H, Lucas C, Ubbink DT: Hyperbaric oxygen therapy for treating acute surgical and traumatic wounds. Cochrane Database Syst Rev 2013;(12):CD008059.

Item 110

ANSWER: D

The cause of this patient's rash is difficult to determine. There are many infections that could result in a cutaneous reaction similar to what she is experiencing. Scarlet fever is caused by a systemic reaction to Streptococcus. In this case, however, the patient is already taking an antibiotic for streptococcal disease so the emergence of new symptoms over a week after starting therapy is highly unlikely. A viral exanthem could also cause a skin rash similar to the one described here. Unfortunately, differentiating between a drug-induced rash and a viral exanthem is not clinically possible. If this differentiation is necessary, the patient should undergo a skin biopsy and allergy testing to determine the offending agent. However, since this approach is impractical in the ambulatory setting, it is most straightforward to discontinue the agent she is on and list it as a potential allergy. An alternative antibiotic such as erythromycin could be used to complete the course of treatment at the discretion of the physician.

Ref: Habif TP, Campbell JL Jr, Chapman MS, et al: Skin Disease: Diagnosis & Treatment, ed 3. Saunders Elsevier, 2011, pp 290-311. 2) Bolognia JL, Jorizzo JL, Schaffer JV: Dermatology, ed 3. Elsevier Saunders, 2012, pp 81, 1345-1365.

Item 111

ANSWER: A

The best pharmacologic agent for this patient is duloxetine, as it is indicated for both depression and chronic pain and is unlikely to cause weight gain. The other agents listed can cause weight gain to varying degrees, and the tricyclic antidepressant nortriptyline is on the Beers list of drugs not recommended for elderly patients (SOR A).

Ref: Drugs associated with weight gain. Pharmacist's Letter/Prescriber's Letter 2007;23(3):220312. 2) Gelenberg AJ, Freeman MP, Markowitz JC, et al: Guideline for the Treatment of Patients With Major Depressive Disorder, ed 3. American Psychiatric Association, 2010, p 74.

Item 112

ANSWER: A

Atenolol may cause growth restriction and reduced placental weight. Because there are many antihypertensive drugs that have a much better safety profile than atenolol, it is recommended that atenolol NOT be used during pregnancy. Both animal and human data suggests that metformin is low risk in pregnancy and it is therefore safe to continue this drug.

Although experience with insulin during pregnancy in humans is very limited, the available data suggests that the risk of harm to the embryo or fetus is low, if it exists at all, as insulin does not cross the placenta. A primary concern is severe maternal hypoglycemia, making careful monitoring of blood glucose necessary.

The animal and most of the human data on bupropion use in pregnancy suggests low risk. Although increased rates of heart defects were reported in two studies, this outcome has not been confirmed by other studies. If a woman requires bupropion she should be informed of the potential risks, but the drug should not be withheld because of pregnancy.

The available animal and human experience indicates that fluoxetine is not a major teratogen. However, SSRIs, including fluoxetine, have been associated with several developmental toxicities, including spontaneous abortion, low birth weight, prematurity, neonatal serotonin syndrome, neonatal behavioral syndrome (withdrawal), possibly sustained abnormal neurobehavior beyond the neonatal period, respiratory distress, and persistent pulmonary hypertension of the newborn. Because the absolute risk is small, most physicians who provide prenatal care will continue drugs such as fluoxetine in patients with a documented significant mood disorder. Patients do, however, need to be aware of possible (albeit low) risks to the fetus.

Ref: Briggs GG, Freeman RK, Yaffe SJ: Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk, ed 9. Lippincott Williams & Wilkins, 2011.

Item 113

ANSWER: B

Patients with microscopic hematuria should initially be assessed for benign causes such as urinary tract infection, vigorous exercise, menstruation, and recent urologic procedures. If none of these is found, the next step would be assessing for renal disease using urine microscopy to look for casts or dysmorphic blood cells, and checking renal function. If the results are negative, CT urography and cystoscopy should be performed. CT evaluates the upper urinary tract for nephrolithiasis and renal cancer, while cystoscopy evaluates the bladder for bladder cancer, urethral strictures, and prostatic problems.

Urine cytology is less sensitive than cystoscopy for bladder cancer. This patient has normal renal function and no signs of renal disease on the urinalysis other than hematuria, so a nephrology consultation is not necessary at this time. Metformin use is not associated with microscopic hematuria. There is no role for antibiotics, given the negative urine culture.

Ref: Sharp VJ, Barnes KT, Erickson BA: Assessment of asymptomatic microscopic hematuria in adults. Am Fam Physician 2013;88(11):747-754.

Item 114

ANSWER: D

The differential diagnosis of multiple small scaling plaques includes drug eruptions, secondary syphilis, guttate psoriasis, and erythema migrans. If the diagnosis cannot be made conclusively by clinical examination, a test for syphilis should be ordered. The rash of secondary syphilis may be indistinguishable from pityriasis rosea on initial examination, particularly when no herald patch is noted. The rashes associated with hyperthyroidism, infectious mononucleosis, idiopathic thrombocytopenic purpura, and fungal infections are not in the differential diagnosis for this patient.

Ref: Habif TP: Clinical Dermatology: A Color Guide to Diagnosis and Therapy, ed 5. Mosby Elsevier, 2010, pp 316-318.

Item 115

ANSWER: D

Inflammatory bowel disease is an autoimmune disorder that affects the gastrointestinal tract, usually beginning in early adulthood. Ulcerative colitis and Crohn's disease are the most common of these conditions. Ulcerative colitis involves just the mucosa of the colon, starting at the anus and extending proximally to a variable distance. Crohn's disease, on the other hand, may involve all layers of gastrointestinal tissue and can occur anywhere between the mouth and the anus. The diagnosis of either of these conditions is made by endoscopy with biopsies in order to best assess the extent and depth of inflammation.

Ref: Adams SM, Bornemann PH: Ulcerative colitis. Am Fam Physician 2013;87(10):699-705. 2) Ford AC, Moayyedi P, Hanauer SB: Ulcerative colitis. BMJ 2013;346:f432.

Item 116

ANSWER: D

Due to the increasing incidence of pertussis, the Centers for Disease Control and Prevention recommends that all pregnant women receive Tdap vaccine during every pregnancy regardless of when their last dose was. It is ideally administered between 27 and 36 weeks gestation to maximize the maternal antibody response and passive antibody transfer to the infant.

Ref: Bridges CB, Coyne-Beasley T; Advisory Committee on Immunization Practices: Advisory Committee on Immunization Practices recommended immunization schedule for adults aged 19 years or older: United States, 2014. Ann Intern Med 2014;160(3):190-197.

Item 117

ANSWER: C

The presence of eosinophiluria in a patient with acute kidney injury (AKI) suggests acute interstitial nephritis, which is typically an allergic reaction to medications such as penicillins, sulfa-containing antibiotics and diuretics, NSAIDs, proton pump inhibitors, etc. Patients with acute interstitial nephritis may also present with a rash, fever, eosinophilia, and other constitutional symptoms. The combination of elevated levels of creatine kinase or myoglobin, a dipstick positive for blood but negative for RBCs, and a history of muscle trauma would suggest rhabdomyolysis. An elevated uric acid level along with a history of rapidly proliferating tumors or recent chemotherapy suggests tumor lysis syndrome and malignancy. Poisoning with ethylene glycol or methanol should be suspected in a patient with AKI and altered mental status with an increased anion gap and osmolar gap. An elevated antistreptolysin O titer suggests poststreptococcal glomerulonephritis when combined with a history of recent pharyngitis.

Ref: Rahman M, Shad F, Smith MC: Acute kidney injury: A guide to diagnosis and management. Am Fam Physician 2012;86(7):631-639.

Item 118

ANSWER: C

Atrial fibrillation is a risk factor for stroke, and most patients benefit from anticoagulation for stroke prevention, but benefits must be balanced against bleeding risks. For some patients with no additional risk factors for stroke the balance is in favor of aspirin rather than warfarin. The CHA_2DS_2-VAS score is a validated tool for identifying these low-risk patients. Those with a score of 0 are most appropriately managed with aspirin. The score is calculated as follows:

		Points
C	Congestive heart failure (or left ventricular systolic dysfunction)	1
H	Hypertension: Blood pressure consistently above 140/90 mm Hg (or hypertension controlled with medication)	1
A_2	Age ≥75 years	2
D	Diabetes mellitus	1
S_2	Prior Stroke or TIA or thromboembolism	2
V	Vascular disease (e.g., peripheral artery disease, myocardial infarction, aortic plaque)	1
A	Age 65–74 years	1
Sc	Sex category (sex = female)	1

Ref: Lip GY, Nieuwlaat R, Pisters R, et al: Refining clinical risk stratification for predicting stroke and thromboembolism in atrial fibrillation using a novel risk factor-based approach: The Euro Heart Survey on Atrial Fibrillation. Chest 2010;137(2):263-272.

Item 119

ANSWER: B

Not all hospitalized patients need stress ulcer prophylaxis. Routine acid-suppression therapy to prevent stress ulcers has no benefit in hospitalized patients outside of the critical care setting. Only critically ill patients who meet specific criteria should receive this therapy. One indication for stress ulcer prophylaxis is prolonged mechanical ventilation for more than 48 hours. Hemodynamically stable patients admitted to general care floors should not receive stress ulcer prophylaxis, as it only decreases the rate of gastrointestinal bleeding from 0.33% to 0.22%. Furthermore, long-term proton pump inhibitor therapy has been associated with complications such as Clostridium difficile diarrhea and community-acquired pneumonia. Discontinuation of stress ulcer prophylaxis should be considered for this patient when she moves out of the critical care unit. It could also be considered when the patient is removed from the ventilator.

Ref: Grube RR, May DB: Stress ulcer prophylaxis in hospitalized patients not in intensive care units. Am J Health Syst Pharm 2007;64(13):1396-1400. 2) Eisa N, Bazerbachi F, Alraiyes AH, Alraies MC: Q: Do all hospitalized patients need stress ulcer prophylaxis? Cleve Clin J Med 2014;81(1):23-25.

Item 120

ANSWER: C

The rash described in this patient with significant thrombocytopenia is consistent with purpura. Purpura from vasculitic causes such as meningococcal infection, disseminated intravascular coagulation, or Henoch-Schönlein purpura (also known as IgA nephropathy) is typically palpable rather than macular as in this case. Immune thrombocytopenic purpura is a relatively common cause of isolated thrombocytopenia. The lack of systemic symptoms or other abnormal laboratory findings make acute lymphoproliferative disorders such as leukemia unlikely. Likewise anemia, neurologic changes, fever, and renal failure are seen with thrombotic thrombocytopenic purpura. The acute onset of purpura and heavy periods makes congenital thrombocytopenia unlikely.

Ref: Gauer RL, Braun MM: Thrombocytopenia. Am Fam Physician 2012;85(6):612-622.

Item 121

ANSWER: C

Uveitis is inflammation of the uveal tract and can affect any or all of its components, including the iris. It is the most common extra-articular manifestation of ankylosing spondylitis (AS), seen in up to 60% of patients with AS. Iritis presents with a painful red eye with conjunctival injection, photophobia, and a sluggishly reacting pupil. A hazy-appearing anterior chamber results from the iris producing an inflammatory exudate. Treatment includes topical corticosteroids, but oral or parenteral corticosteroids and NSAIDs are also effective. Reduced anterior spine flexion (a positive modified Schober test) results from the skeletal manifestations of AS. A "bamboo spine" is classically seen on lumbar radiographs. Oral or ocular antibiotics, artificial tears, ophthalmic olopatadine, and oral acetazolamide are ineffective. Ophthalmology referral is recommended (SOR B).

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 229, 2774-2775.

Item 122

ANSWER: B

For chronic midsubstance Achilles tendinopathy (symptoms lasting longer than 6 weeks), the preferred first-line treatment is an intense eccentric strengthening program of the gastrocnemius/soleus complex (SOR A). In randomized, controlled trials, eccentric strengthening programs have provided 60%–90% improvement in pain and function. Therapeutic modalities such as ultrasonography, electrical stimulation, iontophoresis, and massage and stretching have shown inconsistent results for helping patients achieve a long-term return to function. Surgical techniques are a last resort for severe or recalcitrant cases, but these techniques have not been consistently successful and carry additional risk.

To perform eccentric strengthening for Achilles tendinopathy the patient should stand on the ball of the injured foot with the calcaneal area of the foot over the edge of a stair step. The patient begins with a straight leg and the ankle in flexion. The ankle is then lowered to full dorsiflexion with the heel below the level of the step and then returned to flexion with the assistance of the uninjured leg.

Ref: Childress MA, Beutler A: Management of chronic tendon injuries. Am Fam Physician 2013;87(7):486-490.

Item 123

ANSWER: E

Posttraumatic stress disorder (PTSD) occurs in approximately 20% of women and 8% of men exposed to traumatic events. Symptoms of PTSD include reexperiencing the event, depression, anxiety, changes in behavior, restlessness, social withdrawal, hypervigilance, poor attention, irritability, and fear. Many people with PTSD suffer from anxiety, depression, and substance abuse, and as many as one in five attempt suicide. Treatment with a combination of trauma-focused therapy and medications is recommended. SSRIs and SNRIs are considered first-line treatment. While paroxetine and sertraline are the only ones FDA-approved for PTSD, any of these drugs may be used. Other antidepressant medications can be used but are considered second-line treatment. Benzodiazepines have been used to treat the symptoms of hyperarousal but can worsen other PTSD symptoms and should be avoided. Studies of mood stabilizers in the treatment of PTSD have been mixed and many guidelines discourage their use. Antipsychotic medications are also not recommended. A large multi-site trial of risperidone reported no benefit over placebo.

Ref: Warner CH, Warner CM, Appenzeller GN, Hoge CW: Identifying and managing posttraumatic stress disorder. Am Fam Physician 2013;88(12):827-834.

Item 124

ANSWER: C

Cerebrospinal fluid (CSF) rhinorrhea is not that rare, and has both surgical and nonsurgical causes. It results from a direct communication between the subarachnoid space and the paranasal sinuses. Accidental trauma causes 70%–80% of CSF rhinorrhea cases, with 2%–4% of acute head injuries resulting in CSF rhinorrhea. Nontraumatic CSF rhinorrhea includes high-pressure and normopressure leaks from causes including tumors, processes including boney erosion, empty sella syndrome, and congenital defects including meningoceles. The rhinorrhea is clear and often has a sweet or salty taste. The drainage can be continuous or intermittent, and is often associated with a gush when changing from a recumbent to an upright position. CSF rhinorrhea can lead to meningitis or other infections by serving as a pathway for bacteria.

Ref: Kerr JT, Chu FW, Bayles SW: Cerebrospinal fluid rhinorrhea: Diagnosis and management. Otolaryngol Clin North Am 2005;38(4):597-611. 2) Flint PW, Haughey BH, Lund VJ, et al (eds): Cummings Otolaryngology: Head and Neck Surgery, ed 5. Mosby Elsevier, 2010, pp 785-796.

Item 125

ANSWER: C

Prolactin levels can be elevated because of a pituitary adenoma, medication side effects, hypothyroidism, or a mass lesion compromising normal hypothalamic inhibition. Elevated prolactin levels inhibit the secretion and effect of gonadotropins. In almost all patients with an elevated prolactin level, MRI of the pituitary is recommended to exclude the possibility of a pituitary adenoma (SOR C). This patient is not on any medications, essentially ruling out a pharmacologic trigger for her elevated prolactin.

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

Item 126

ANSWER: E

The diagnosis of plantar fasciitis is based primarily on the history and physical examination. Patients may present with heel pain, and palpation of the medial plantar calcaneal region may elicit a sharp pain. Discomfort in the proximal plantar fascia can be elicited by passive ankle/first toe dorsiflexion. Diagnostic imaging is rarely needed for the initial diagnosis of plantar fasciitis. In recalcitrant plantar fasciitis plain films may be helpful for detecting bony lesions of the foot. Ultrasonography is inexpensive and may be useful for ruling out soft-tissue pathology of the heel in some patients. While MRI is expensive, it is a valuable tool for assessing causes of recalcitrant heel pain.

Ref: Goff JD, Crawford R: Diagnosis and treatment of plantar fasciitis. Am Fam Physician 2011;84(6):676-682.

Item 127

ANSWER: B

The U.S. Preventive Services Task Force recommends daily aspirin for women ages 55–79 when the benefit of stroke risk reduction outweighs the risk of gastrointestinal hemorrhage. Aspirin has been shown to be effective for the secondary prevention of cardiovascular disease in both men and women. In men, randomized trials have shown that low-dose aspirin decreases the risk of a first myocardial infarction, but not stroke.

Ref: Ridker PM, Cook NR, Lee IM, et al: A randomized trial of low-dose aspirin in the primary prevention of cardiovascular disease in women. N Engl J Med 2005;352(13):1293-1304. 2) US Preventive Services Task Force: Aspirin for the Prevention of Cardiovascular Disease: Recommendation Statement. AHRQ pub no 09-05129-EF-2, 2009. 3) Riley M, Dobson M, Jones E, Kirst N: Health maintenance in women. Am Fam Physician 2013;87(1):30-37.

Item 128

ANSWER: C

Recent reports indicate that the risk of a serious allergic reaction to second- and third-generation cephalosporins in patients with penicillin or amoxicillin allergy appears to be almost nil, and no greater than the risk among patients without such allergies. While patients with a history of a serious type I immediate or accelerated (anaphylactoid) reaction to amoxicillin can be safely treated with cefdinir, cefuroxime, or cefpodoxime, some physicians may wish to recommend an allergy referral to determine tolerance before initiation of therapy. Pneumococcus and Haemophilus influenzae are often resistant to trimethoprim/sulfamethoxazole and azithromycin, and these agents are therefore not recommended for the treatment of acute bacterial sinusitis in the penicillin-allergic patient. Doxycycline should not be used in children younger than 8 years of age except for anthrax and some tickborne infections. Amoxicillin/clavulanate is contraindicated in a penicillin-allergic patient.

Ref: Wald ER, Applegate KE, Bordley C, et al: Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years. Pediatrics 2013;132(1):e262-e280.

Item 129

ANSWER: B

Somatic complaints are seen in up to two-thirds of primary care patients with depression, and are more likely in certain groups, including pregnant women, children, the elderly, and low-income groups.

Ref: Tylee A, Gandhi P: The importance of somatic symptoms in depression in primary care. Prim Care Companion J Clin Psychiatry 2005;7(4):167-176. 2) Pacala J, Sullivan G (eds): Geriatrics Review Syllabus, ed 7. American Geriatrics Society, 2010, sec 7, pp 331-332.

Item 130

ANSWER: B

Left bundle branch block makes the EKG uninterpretable during an exercise stress test, and can also interfere with nuclear imaging performed during the test. It is associated with transient positive defects in the anteroseptal and septal regions in the absence of a lesion within the left anterior descending coronary artery. This leads to a high rate of false-positive tests and low specificity. Pharmacologic stress tests using vasodilators such as adenosine with nuclear imaging have a much higher specificity and positive predictive value for LAD lesions, and the same is true for dobutamine stress echocardiography, which is why these are the preferred methods for evaluating patients with left bundle branch block. Pharmacologic stress testing would not be preferred for evaluating the other EKG abnormalities listed.

Ref: Wilson JF: Stable ischemic heart disease. Ann Intern Med 2014;160(1):ITC1-1-ITC1-16.

Item 131

ANSWER: E

Poison ivy dermatitis is caused by urushiol, a resin found in poison ivy, poison oak, and poison sumac plants. Direct contact with the leaves or vines will result in an acute dermatitis manifested initially by erythema, and later in more severe cases by vesicles and bullae. This is a type IV T cell–mediated allergic reaction, so it typically takes at least 12 hours and often 2–3 days before the reaction is fully manifested. Depending on the degree of contact (i.e., the amount of resin on the skin), the rash often progresses over a couple of days, giving the impression that it is spreading. Also, delayed contact with resin from contaminated clothing, gloves, or pets may result in new lesions appearing over several days. Brushing against the leaves of the plant causes the linear streaking pattern characteristic of poison ivy dermatitis. It has been demonstrated that the resin can be inactivated with any type of soap, thereby preventing the reaction, but the sooner the better. Approximately 50% of the resin can be removed by soap and water within 10 minutes of contact, but after 30 minutes only about 10% can still be removed.

Therapy depends on the severity of the reaction. Group I–V topical corticosteroids are effective for limited eruptions (less than 3%–5% body surface area) but are ineffective in areas with vesicles or bullae. Group I–II fluorinated agents are at the strongest end of the spectrum and are not recommended for use on the face or intertriginous areas. Short bursts of low-potency oral corticosteroids such as a methylprednisolone dose pack have a high rate of relapse as the taper finishes, so the expert consensus is to use a higher dosage tapered over a longer period, generally 10–14 days, in order to prevent a relapse. Most experts recommend oral corticosteroids over intramuscular corticosteroid suspensions, which may not provide high enough concentrations in the skin (SOR C). However, 40–80 mg of intramuscular triamcinolone (or an equivalent) is an alternative to oral treatment, especially if adherence is an issue. Pruritus can be treated

with oral antihistamines. Secondary infection, which is common with vesiculobullous involvement, is treated with appropriate oral antibiotics.

Ref: Habif TP: Clinical Dermatology: A Color Guide to Diagnosis and Therapy, ed 5. Mosby Elsevier, 2010, pp 138-139.

Item 132

ANSWER: C

The most likely diagnosis is Pneumocystis pneumonia. Initially named Pneumocystis carinii, the causative organism has been reclassified and renamed Pneumocystis jiroveci. It causes disease in immunocompromised patients. In non–HIV-infected patients, the most significant risk factors are defects in cell-mediated immunity, glucocorticoid therapy, use of immunosuppressive agents (especially when dosages are being lowered), hematopoietic stem cell or solid organ transplant, cancer, primary immunodeficiencies, and severe malnutrition.

The clinical presentation in patients without HIV/AIDS is typically an acute onset of hypoxia and respiratory failure, associated with a dry cough and fever. Characteristic radiographic findings include diffuse bilateral interstitial infiltrates.

Pneumococcal pneumonia typically presents with fever, chills, cough, and pleuritic chest pain. A sudden onset of severe hypoxia is less common. Radiologic findings typically include lobar infiltrates or bronchopneumonia (with a segmental pattern of infiltrate), whereas diffuse bilateral infiltrates are much less common. Staphylococcal pneumonia usually has radiologic findings of focal, multiple infiltrates or cavitary lesions.

Pulmonary tuberculosis presents most commonly with pleuritic or retrosternal chest pain. Fever is present in about 25% of patients. Cough is actually less common, and a sudden onset of acute hypoxia would be a very rare presentation. Radiographs typically reveal hilar adenopathy and pleural effusion. Diffuse bilateral interstitial infiltrates would be a very rare finding.

Spontaneous pneumothorax does present with an acute onset of hypoxia, tachypnea, and respiratory distress. However, fever would be unlikely and the radiologic findings in this patient are not consistent with pneumothorax.

Ref: Wilkin A, Feinberg J: Pneumocystis carinii pneumonia: A clinical review. Am Fam Physician 1999;60(6):1699-1708, 1713-1714. 2) Gilroy SA, Bennett NJ: Pneumocystis pneumonia. Semin Respir Crit Care Med 2011;32(6):775-782.

Item 133

ANSWER: B

Benzodiazepines play a key role in the management of alcohol withdrawal syndrome (AWS), especially as they are highly effective in the prevention and treatment of seizures associated with this syndrome. In general, nonbenzodiazepine anticonvulsants are not effective for preventing seizures in patients with AWS. Therefore, their use is not recommended in those at risk for seizures or those who have a CIWA-Ar score in the moderate or severe range. The potential for abuse with these agents is much lower than with benzodiazepines, and they are preferred over benzodiazepines for outpatient management of AWS, especially in those with a past history of substance abuse. Carbamazepine and valproic acid may be effective for managing the symptoms associated with AWS. Gabapentin has been shown to be as effective as lorazepam in treating AWS and reducing alcohol use during withdrawal. Phenytoin is not effective for the treatment or prevention of seizures associated with AWS (SOR B).

Ref: Addolorato G, Leggio L, Abenavoli L, et al: Baclofen in the treatment of alcohol withdrawal syndrome: A comparative study vs diazepam. Am J Med 2006;119(3):276.e13-276.e18. 2) Amato L, Minozzi S, Vecchi S, Davoli M: Benzodiazepines for alcohol withdrawal. Cochrane Database Syst Rev 2010;(3):CD005063. 3) Minozzi S, Amato L, Vecchi S, Davoli M: Anticonvulsants for alcohol withdrawal. Cochrane Database Syst Rev 2010;(3):CD005064. 4) Muncie HL Jr, Yasinian Y, Oge L: Outpatient management of alcohol withdrawal syndrome. Am Fam Physician 2013;88(9):589-595.

Item 134

ANSWER: E

While all of the options listed may have some value in evaluating the preoperative status of a patient with long-standing rheumatoid arthritis, imaging of the patient's cervical spine to detect atlantoaxial subluxation would be most important for preventing a catastrophic spinal cord injury during intubation. In many cases cervical fusion must be performed before other elective procedures can be contemplated. Although rheumatoid arthritis may influence oxygen saturation and the erythrocyte sedimentation rate, these tests would not alert the surgical team to the possibility of significant operative morbidity and mortality. Resting pulse rate and a rheumatoid factor titer are unlikely to be significant factors in this preoperative scenario.

Ref: Neva MH, Häkkinen A, Mäkinen H, et al: High prevalence of asymptomatic cervical spine subluxation in patients with rheumatoid arthritis waiting for orthopaedic surgery. Ann Rheum Dis 2006;65(7):884-888. 2) Klippel JH, Stone JH, Crofford LJ, et al (eds): Primer on the Rheumatic Diseases, ed 13. Springer, 2008, p 653. 3) Miller RD, Eriksson LI, Fleisher LA, et al (eds): Miller's Anesthesia, ed 7. Churchill Livingstone, 2010, pp 2245-2246. 4) Firestein GS, Budd RC, Gabriel SE, et al: Kelley's Textbook of Rheumatology, ed 9. Elsevier Saunders Co, 2013, pp 115-117.

Item 135

ANSWER: D

This patient has rapidly progressive erythema and pain in her right lower extremity, along with fever, tachycardia, and leukocytosis. Group A Streptococcus (GAS) is a common monomicrobial cause of type II necrotizing skin infections, which are often referred to as necrotizing fasciitis and warrant immediate attention (SOR C). Type I infections are often polymicrobial due to combinations of staphylococci (especially Staphylococcus epidermidis in combination with β-hemolytic streptococci), enterococci, Enterobacteriaceae species (commonly Escherichia coli, Proteus mirabilis, Klebsiella pneumoniae, and Pseudomonas aeruginosa), streptococci, Bacteroides/Prevotella species, anaerobic gram-positive cocci, and Clostridium species.

For this patient with a suspected necrotizing skin infection, aggressive treatment with a broad-spectrum empiric antibiotic is recommended along with hemodynamic support and consideration of surgical exploration and debridement of necrotic tissue (SOR C). Empiric antibiotic treatment of a potential necrotizing infection should consist of broad-spectrum antimicrobial therapy with activity against gram-positive, gram-negative, and anaerobic organisms; special consideration should be given to group A Streptococcus, Clostridium species, and methicillin-resistant Staphylococcus aureus (MRSA).

Ref: Hasham S, Matteucci P, Stanley PR, Hart NB: Necrotising fasciitis. BMJ 2005;330(7495):830-833. 2) Stevens DL, Bisno AL, Chambers HF, et al: Practice guidelines for the diagnosis and management of skin and soft-tissue infections. Clin Infect Dis 2005;41(10):1373-1406. 3) Anaya DA, Dellinger EP: Necrotizing soft-tissue infection: Diagnosis and management. Clin Infect Dis 2007;44(5):705-710. 4) Department of Health and Human Services: Group A Streptococcal (GAS) Disease (strep throat, necrotizing fasciitis, impetigo). Centers for Disease Control and Prevention, 2008. 5) Breen JO: Skin and soft tissue infections in immunocompetent patients. Am Fam Physician 2010;81(7):893-899.

Item 136

ANSWER: E

The U.S. Preventive Services Task Force recommends screening for Chlamydia infection in all sexually active, nonpregnant young women under the age of 25 (grade B recommendation). Papanicolaou testing is recommended starting at 21 years of age. Testicular cancer screening, whether by self-examination or as part of the physical examination, is not recommended. Scoliosis screening for asymptomatic adolescents is also not recommended. There is insufficient evidence to recommend for or against lipid screening.

Ref: Screening for chlamydial infection. US Preventive Services Task Force, 2007. 2) Ham P, Allen C: Adolescent health screening and counseling. Am Fam Physician 2012;86(12):1109-1116.

Item 137

ANSWER: E

The use of gastric acid inhibitors, particularly when a proton pump inhibitor and H_2-receptor antagonist are combined, is significantly associated with vitamin B_{12} deficiency. This is more common when combined therapy has been used for 2 years or longer. Because gastric acid is required for the liberation of vitamin B_{12} bound to food protein before it is bound to intrinsic factor for absorption, suppression of gastric acid may lead to vitamin B_{12} deficiency.

Ref: Lam JR, Schneider JL, Zhao W, Corley DA: Proton pump inhibitor and histamine 2 receptor antagonist use and vitamin B_{12} deficiency. JAMA 2013;310(22):2435-2442.

Item 138

ANSWER: E

Frozen shoulder is an inflammatory contracture of the shoulder capsule and mostly affects the anterosuperior and anteroinferior capsular ligaments, limiting glenohumeral movement. Diabetic patients have a 10%–20% lifetime risk of frozen shoulder. Only two other common conditions selectively limit passive external rotation: locked posterior dislocation and osteoarthritis. Plain films of the shoulder should reveal both conditions. Rotator cuff tears do not limit passive range of motion, and calcific tendinitis has a characteristic radiographic appearance.

Ref: Robinson CM, Seah KT, Chee YH, et al: Frozen shoulder. J Bone Joint Surg Br 2012;94(1):1-9.

Item 139

ANSWER: D

Patients with HIV infection and severe immunodeficiency are at risk for certain opportunistic infections. Susceptibility to opportunistic infections can be measured by CD4+ T lymphocyte counts. Patients with a CD4+ count <200 cells/mm^3 should receive trimethoprim/sulfamethoxazole for prevention of Pneumocystis pneumonia, and prophylaxis against Toxoplasma gondii should also be given if the CD4+ level is <100 cells/mm^3. Azithromycin is used to prevent infection with Mycobacterium avium-intracellulare complex when CD4+ counts are <50 cells/mm^3. Itraconazole is used to prevent Histoplasma capsulatum infection when the CD4+ count is ≤ 150 cells/mm^3 if the patient is at risk due to occupational exposure or living in a community with a hyperendemic rate of histoplasmosis (>10 cases per 100 patient years). There is no recommendation for prophylaxis against microsporidiosis.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 2190-2194.

Item 140

ANSWER: C

Legg-Calvé-Perthes disease results from interruption of the blood supply to the still-growing femoral head. It occurs in children 2–12 years of age and presents with hip pain and an atraumatic limp. Common physical findings include leg-length discrepancies, and limited abduction and internal rotation. Radiographs reveal sclerosis of the proximal femur with joint space widening. MRI confirms osteonecrosis.

Septic arthritis also causes atraumatic anterior hip pain but occurs in the acutely ill, febrile patient. A CBC, erythrocyte sedimentation rate, C-reactive protein level, and guided hip aspiration are recommended if septic arthritis is suspected. A diagnosis of stress fracture should be considered in patients with a history of overuse and weight-bearing exercise. These patients have pain that is worse with activity, and pain on active leg raising. MRI can detect fractures not seen on plain films.

Iliopsoas bursitis presents with snapping or popping of the hip on extension from a flexed position. Labral tears present with sharp anterior hip pain at times, with radiation to the thigh or buttock. Usually patients will have mechanical symptoms such as clicking with activity. The FABER (flexion, abduction, external rotation) and FADIR (flexion, adduction, internal rotation) impingement tests are sensitive for labral tears.

Ref: Atanda A Jr, Shah SA, O'Brien K: Osteochondrosis: Common causes of pain in growing bones. Am Fam Physician 2011;83(3):285-291. 2) Wilson JJ, Furukawa M: Evaluation of the patient with hip pain. Am Fam Physician 2014;89(1):27-34.

Item 141

ANSWER: B

Hormonal contraceptives are the first-line therapy for menstrual abnormalities, hirsutism, and acne in polycystic ovary syndrome. Clomiphene is used for infertility. Thiazolidinediones have an unfavorable risk-benefit ratio overall. Metformin is beneficial for metabolic/glycemic abnormalities and menstrual irregularities, but does not improve hirsutism or acne. Spironolactone may be used as an add-on to hormonal contraceptives for treatment of hirsutism and acne.

Ref: Legro RS, Arslanian SA, Ehrmann DA, et al: Diagnosis and treatment of polycystic ovary syndrome: An Endocrine Society clinical practice guideline. J Clin Endocrinol Metab 2013;98(12):4565-4592.

Item 142

ANSWER: D

Patients taking β-blockers may be resistant to treatment with epinephrine. Glucagon has positive inotropic and chronotropic effects that are not mediated through β-receptors, and should be administered to anaphylactic patients on β-blockers when their response to epinephrine is either poor or absent. In patients not taking β-blockers a repeat dose of epinephrine is recommended when the response to the first dose is either poor or absent. Intravenous methylprednisolone and diphenhydramine may also be repeated based on clinical response (SOR C). An H_2-blocker such as cimetidine may provide additional benefit in combination with an H_1 antihistamine. In an emergency situation such as this, there is no benefit to using a long-acting corticosteroid.

Ref: Thomas M, Crawford I: Glucagon infusion in refractory anaphylactic shock in patients on β-blockers. Emerg Med J 2005;22(4):272-273. 2) Arnold JJ, Williams PM: Anaphylaxis: Recognition and management. Am Fam Physician 2011;84(10):1111-1118.

Item 143

ANSWER: B

Of the choices listed, prematurity is the greatest risk factor for group B streptococcal infection. The most important risk would be signs or symptoms of sepsis in a neonate. The other conditions listed are not risk factors for early-onset GBS in neonates.

Ref: Verani JR, McGee L, Schrag SJ: Prevention of perinatal group B streptococcal disease—Revised guidelines from CDC, 2010. MMWR Recomm Rep 2010;59(RR-10):1-36.

Item 144

ANSWER: C

The American Geriatrics Society (AGS) position statement on feeding tubes states that percutaneous feeding tubes are not recommended for older adults with advanced dementia, and that careful hand feeding should be offered instead. This is the first recommendation by the AGS in the Choosing Wisely campaign.

Careful hand feeding for patients with severe dementia is at least as good as tube feeding with regard to the outcomes of death, aspiration pneumonia, functional status, and patient comfort. Regular food is preferred. Tube feeding is associated with agitation, increased use of physical and chemical restraints, and worsening pressure ulcers.

The preponderance of evidence does not support the use of tube feedings, based upon expert opinion and extensive observational data. Published empirical work using observational data is highly consistent regarding the lack of efficacy for tube feeding in this population.

Ref: Feeding tubes in advanced dementia position statement. American Geriatrics Society, 2013. 2) American Geriatrics Society: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 145

ANSWER: A

Individuals on the National Weight Control Registry typically eat a low-fat diet rich in complex carbohydrates, eat breakfast daily, weigh themselves at least once a week, and are physically active for 60–90 minutes a day.

Ref: McKinney L, Skolnik N, Chrusch A: Diagnosis and Management of Obesity. AAFP Monograph, 2013, pp 1-24.

Item 146

ANSWER: D

The Ottawa Ankle Rules should be used to rule out fracture and prevent unnecessary radiographs. According to these guidelines, ankle radiographs are needed if there is pain over the malleolus plus bony tenderness over potential fracture areas, or an inability to bear weight and walk four steps immediately after the injury and in the emergency department or physician's office (SOR A).

Ref: Tiemstra JD: Update on acute ankle sprains. Am Fam Physician 2012;85(12):1170-1176.

Item 147

ANSWER: A

Benign nocturnal limb pains of childhood (growing pains) occur in as many as one-third of children, most often between 4 and 6 years of age. The etiology is unknown, but the course does not parallel pubescent growth, as would be expected if bone growth were the source of the pain. Pain often awakens the child within hours of falling asleep following an active day. It is generally localized around the knees, most often in the shins and calves, but also may affect the thighs and the upper extremities. A characteristic history coupled with a normal physical examination will confirm the diagnosis. Reassurance that no additional tests or treatments are necessary and that the condition is self-limiting is the most appropriate response.

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 148

ANSWER: A

This patient's presentation is consistent with community-acquired pneumonia (CAP). Pathogens commonly involved include viruses such as influenza, as well as Mycoplasma pneumoniae and Streptococcus pneumoniae. This patient's history and findings are most consistent with early lobar pneumonia, given the sputum production, presence of rales, and radiographic findings, and empiric antibiotic treatment is most appropriate. His premorbid history of good health and the lack of findings such as confusion, tachypnea, hypotension, or multilobar infiltrates that would indicate severe CAP make outpatient antibiotic treatment the most appropriate option. He is outside of the time frame when anti-influenza treatments would be expected to be effective, even if influenza seemed likely.

For previously healthy individuals who have not taken antibiotics in the previous 3 months the most appropriate treatment for CAP is empiric treatment with an oral macrolide such as azithromycin, clarithromycin, or erythromycin (level I evidence) or doxycycline (level III evidence). In the presence of comorbidities such as diabetes, alcoholism, or chronic heart, lung, liver, or renal diseases, the treatment of CAP should provide broader coverage with dual antibiotic treatment regimens including combinations of fluoroquinolones, β-lactam drugs, and macrolide options, and hospitalization is often indicated.

Ref: Mandell LA, Wunderink RG, Anzueto A, et al: 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. 2) Watkins RR, Lemonovich TL: Diagnosis and management of community-acquired pneumonia in adults. Am Fam Physician 2011;83(11):1299-1306.

Item 149

ANSWER: C

This patient presents with marked hyperglycemia but no evidence of ketoacidosis or nonketotic coma. Differentiating between type 1 and type 2 diabetes mellitus is important for guiding therapy. The gradual onset of symptoms is more consistent with type 2 diabetes mellitus, whereas type 1 diabetes typically has a more rapid onset. Patients with type 1 diabetes typically need lower doses of insulin to correct hyperglycemia, as they lack the insulin insensitivity that is the hallmark of type 2 diabetes. Positive anti-GAD antibodies and low C-peptide at the time of the initial diagnosis are also consistent with type 1 diabetes, although C-peptide levels can also be low in long-standing type 2 diabetes. Weight loss occurs in both types of diabetes mellitus when glucose is profoundly elevated.

Ref: Goldman L, Schafer AI (eds): Goldman's Cecil Medicine, ed 24. Elsevier Saunders, 2011, pp 236, 1475-1489.

Item 150

ANSWER: C

The American College of Chest Physicians and the American Thoracic Society recommend that for patients discharged on supplemental home oxygen following hospitalization for an acute illness, the prescription for home oxygen should not be renewed without assessing the patient for ongoing hypoxemia (SOR C). The rationale for this recommendation is that hypoxemia often resolves after recovery from an acute illness. The guidelines recommend that a plan be established to reassess the patient no later than 90 days after discharge and that Medicare guidelines and evidence-based criteria should be followed to determine whether the patient meets the criteria for supplemental oxygen.

Continuous oxygen therapy is indicated in patients with COPD and severe hypoxemia. There is good evidence that the addition of home long-term continuous oxygen therapy for COPD increases survival rates in patients with severe hypoxemia, defined as an oxygen saturation $< 90\%$ or a $PaO_2 < 8$ kPa (60 mm Hg), but not in patients with moderate hypoxemia or nocturnal desaturation.

Continuous supplemental oxygen should be used to improve exercise performance and survival in patients with moderate to severe COPD who have severe daytime hypoxemia. The Centers for Medicare and Medicaid Services (CMS) provides guidelines for supplemental oxygen therapy and sets the standard for nearly all adult oxygen prescriptions. According to these standards, oxygen therapy is covered for patients with a documented $PaO_2 \leq 55$ mm Hg or an oxygen saturation $\leq 88\%$ on room air at rest.

Ref: Bailey RE: Home oxygen therapy for treatment of patients with chronic obstructive pulmonary disease. Am Fam Physician 2004;70(5):864-865. 2) Grimes GC, Manning JL, Patel P, Via RM: Medications for COPD: A review of effectiveness. Am Fam Physician 2007;76(8):1141-1148. 3) American College of Chest Physicians and American Thoracic Society: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 151

ANSWER: B

Atypical antipsychotics may reduce the duration of delirium in adult intensive-care patients, and are recommended by the American College of Critical Care Medicine in their clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive-care unit.

The American Geriatrics Society and the American Psychiatric Association (APA) recommend not using antipsychotics as a first choice to treat the behavioral and psychological symptoms associated with dementia, such as aggression and resistance to care. These drugs have limited benefit and can cause serious harm, including stroke and premature death. The APA also recommends against routinely prescribing two or more antipsychotic medications concurrently, and against routinely prescribing antipsychotic medications as a first-line intervention for insomnia in adults.

Ref: Barr J, Fraser GL, Puntillo K, et al: Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the Intensive Care Unit: Executive summary. Am J Health Syst Pharm 2013;70(1):53-58. 2) American Psychiatric Association: Five things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014. 3) American Geriatrics Society: Ten things physicians and patients should question. ABIM Foundation Choosing Wisely campaign, 2014.

Item 152

ANSWER: A

The presence of palpable purpura along with a history of recent or current medication use is highly suggestive of drug-induced vasculitis. Skin is the organ most often affected by drug-induced vasculitis, with lesions predominantly affecting the lower extremities. Although clinical findings may be limited to the skin, systemic manifestations such as fever, fatigue, and joint pains can be present. Offending drugs include sulfonamides, allopurinol, thiazides, phenytoin, and penicillins. A skin biopsy will reveal the presence of eosinophils. The first step in management includes discontinuation of the offending agent. Patients with mild and non–life-threatening small-vessel vasculitis should be treated with supportive care, while those with more severe features should receive corticosteroids. There is no role for antihistamines, plasmapheresis, or platelet transfusion in drug-induced vasculitis (SOR B).

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 2785-2801.

Item 153

ANSWER: B

Spironolactone is an aldosterone antagonist. This class of drugs has been found to reduce all-cause mortality and cardiac death when initiated after a myocardial infarction in patients with a low left ventricular ejection fraction (LVEF) and signs of heart failure. Guidelines from the American College of Cardiology and the American Heart Association recommend the use of aldosterone blockers in patients who have heart failure or diabetes mellitus, have an LVEF ≤40%, are receiving ACE inhibitors and β-blockers, and have a serum potassium level <5.0 mEq/L (5.0 mmol/L) and a creatinine level >2.5 mg/dL in men or >2.0 mg/dL in women. None of the other medications listed has this level of evidence to support its use.

Ref: Pitt B, White H, Nicolau J, et al; EPHESUS Investigators: Eplerenone reduces mortality 30 days after randomization following acute myocardial infarction in patients with left ventricular systolic dysfunction and heart failure. J Am Coll Cardiol 2005;46(3):425–431. 2) Mercado MG, Smith DK, McConnon ML: Myocardial infarction: Management of the subacute period. Am Fam Physician 2013;88(9):581-588. 3) Amsterdam EA, Wenger NK, Brindis RG, et al: 2014 AHA/ACC guideline for the management of patients with non–ST-elevation acute coronary syndromes: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation 2014;Sep 23[Epub ahead of print].

Item 154

ANSWER: E

The patient described has an inflammatory myopathy of the polymyositis/dermatomyositis group. Proximal muscle involvement and elevation of serum muscle enzymes such as creatine kinase and aldolase are characteristic. Corticosteroids are the accepted treatment of choice.

It is extremely unlikely that Duchenne's muscular dystrophy would present after age 30. In amyotrophic lateral sclerosis, an abnormal neurologic examination with findings of upper motor neuron dysfunction is characteristic. Patients with myasthenia gravis typically have optic involvement, often presenting as diplopia. The predominant symptom of aseptic necrosis of the femoral head is pain rather than proximal muscle weakness. Elevated muscle enzymes are not characteristic.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 3509-3518.

Item 155

ANSWER: B

Uterotonics are the first-line treatment for postpartum hemorrhage in patients with decreased uterine tone. While all of the uterotonic agents listed are options for the management of postpartum hemorrhage, methylergonovine should be avoided if the patient is hypertensive. It is an ergot alkaloid that causes generalized smooth muscle contraction and can raise blood pressure. Oxytocin and misoprostol do not have any contraindications. Carboprost tromethamine should be avoided in asthmatic patients and is relatively contraindicated if the patient has hepatic, renal, or cardiac disease.

Ref: Gabbe SG, Niebyl JR, Simpson JL, et al (eds): Obstetrics: Normal and Problem Pregnancies, ed 6. Saunders Elsevier, 2012, pp 427-428.

Item 156

ANSWER: D

Ulcerative colitis (UC) is a lifelong condition that results in a waxing and waning autoimmune inflammation of the colon. Clinical symptoms are inadequate for assessing the need for ongoing therapy. For this reason, once a patient with UC has achieved remission with a specific medication, that medication should be continued indefinitely unless the disease resurfaces. Sulfasalazine is one of the most effective agents for this purpose, is usually well tolerated, and is considered first-line therapy for ulcerative colitis. There is no apparent reason to consider a higher order of therapy (azathioprine) in this patient or to refer her for colectomy. Patients with UC who have had a history of moderate or extensive involvement of the colon, however, are at markedly increased risk for the development of colorectal cancer. Current guidelines recommend beginning screening colonoscopy 10 years after the initial diagnosis and continuing every 2–5 years, with the interval based on the findings.

Ref: Adams SM, Bornemann PH: Ulcerative colitis. Am Fam Physician 2013;87(10):699-705. 2) Ford AC, Moayyedi P, Hanauer SB: Ulcerative colitis. BMJ 2013;346:f432.

Item 157

ANSWER: A

Tramadol lowers the seizure threshold and should be avoided in patients with seizures. It is considered a second-line treatment for mild to moderate pain (SOR B). A history of heart failure, ventricular dysrhythmias, or hypertension is not a contraindication to its use.

Ref: Blondell RD, Azadfard M, Wisniewski AM: Pharmacologic therapy for acute pain. Am Fam Physician 2013;87(11):766-772.

Item 158

ANSWER: B

Suspected COPD should be confirmed by spirometry in stable patients, based on a postbronchodilator FEV_1/FVC ratio $< 70\%$ of predicted (SOR C). While guidelines for the treatment of COPD differ slightly among the leading national and international organizations, most have come to a consensus on using this criterion for the diagnosis (SOR C).

Ref: Stephens MB, Yew KS: Diagnosis of chronic obstructive pulmonary disease. Am Fam Physician 2008;78(1):87-92. 2) Qaseem A, Wilt TJ, Weinberger SE, et al: Diagnosis and management of stable chronic obstructive pulmonary disease: A clinical practice guideline update from the American College of Physicians, American College of Chest Physicians, American Thoracic Society, and European Respiratory Society. Ann Intern Med 2011;155(3):179-191. 3) Gruffydd-Jones K, Loveridge C: The 2010 NICE COPD guidelines: How do they compare with the GOLD guidelines? Prim Care Respir J 2011;20(2):199-204. 4) Lee H, Kim J, Tagmazyan K: Treatment of stable chronic obstructive pulmonary disease: The GOLD guidelines. Am Fam Physician 2013;88(10):655-663. 5) Global Strategy for the Diagnosis, Management and Prevention of COPD. Global Initiative for Chronic Obstructive Lung Disease (GOLD), 2014.

Item 159

ANSWER: E

The concentration of lithium into the thyroid gland inhibits iodine uptake, iodotyrosine coupling, and thyroid hormone secretion. Thyroglobulin structure is also affected by lithium. The effect can be significant enough to produce a state of hypothyroidism and/or goiter, and studies have shown that as many as two-thirds of patients develop hypothyroidism within 10 years of beginning lithium treatment. Routine monitoring of TSH and T_4 every 6–12 months is a recommended standard for all patients receiving lithium treatment. Lithium administration would not be expected to directly affect any of the other blood levels listed, so the indications for obtaining these tests are the same as for other patients.

Ref: Bocchetta A, Loviselli A: Lithium treatment and thyroid abnormalities. Clin Pract Epidemiol Ment Health 2006;2:23. 2) The Management of Bipolar Disorder Working Group: VA/DoD Clinical Practice Guideline for management of bipolar disorder in adults. Department of Veteran Affairs, 2010.

Item 160

ANSWER: A

Guidelines from the Infectious Diseases Society of America recommend treatment of acute uncomplicated cystitis based on the patient's symptoms rather than documented evidence of infection (SOR C). In healthy premenopausal women with no history of a urinary tract functional abnormality, current pregnancy, or another underlying condition that may increase the risk of treatment failure, infection can be presumed based on symptoms. Patients with acute uncomplicated cystitis are not febrile and have no vaginal symptoms. Men and children, as well as women who do not meet these criteria, require in-person evaluation.

A urine dipstick has relatively low sensitivity and specificity for urinary tract infection (SOR A). Negative dipstick results do not reliably rule out infection in a patient with strongly positive symptoms. A midstream culture is as good as or better than a urinary catheter–obtained specimen (SOR B). However, neither of these is required for the diagnosis or treatment of uncomplicated acute cystitis.

Ref: Hooton TM: Uncomplicated urinary tract infection. N Engl J Med 2012;366(11):1028-1037. 2) Hooton TM, Roberts PL, Cox ME, Stapleton AE: Voided midstream urine culture and acute cystitis in premenopausal women. N Engl J Med 2013;369(20):1883-1891.

Item 161

ANSWER: D

Thyroid nodules are often detected either during a clinical examination or incidentally on an imaging study. The first step in the evaluation of a thyroid nodule is to order a TSH level. If the TSH level is suppressed, radionuclide scintigraphy should be ordered to rule out a hyperfunctioning nodule. If the TSH level is either normal or high, the current recommendation is to biopsy only nodules >1 cm. Clinical follow-up is recommended for nodules ≤ 1 cm.

Ref: Knox MA: Thyroid nodules. Am Fam Physician 2013;88(3):193-196.

Item 162

ANSWER: C

This patient has heavy menstrual bleeding, associated anemia, and morbid obesity, all of which need to be taken into consideration when choosing contraception. Medroxyprogesterone acetate can contribute to weight gain and thus should not be the first choice in this individual. The norelgestromin/ethinyl estradiol transdermal system is not recommended in patients with a weight over 90 kg and thus is not an option for this patient. The levonorgestrel-releasing intrauterine system would be the best option, given the associated significant decrease in menstrual blood loss after the first 3 months of insertion and equal effectiveness in obese and non-obese patients. Although a diaphragm is an option, it will not decrease her menstrual blood loss.

Ref: Mansour D, Korver T, Marintcheva-Petrova M, Fraser IS: The effects of Implanon on menstrual bleeding patterns. Eur J Contracept Reprod Health Care 2008;13(Suppl 1):13-28. 2) Kaneshiro B, Edelman A: Contraceptive considerations in overweight teens. Curr Opin Obstet Gynecol 2011;23(5):344-349. 3) Xu H, Wade JA, Peipert JF, et al: Contraceptive failure rates of etonogestrel subdermal implants in overweight and obese women. Obstet Gynecol 2012;120(1):21-26.

Item 163

ANSWER: E

Most watery diarrhea is self-limited and testing is not indicated. A diagnostic workup is usually reserved for patients with severe dehydration or illness, diarrhea persisting for more than 3–7 days, fever, bloody stool, immunosuppression, or a history suggesting nosocomial infection or an outbreak. Indiscriminate use of laboratory testing is inefficient and not cost-effective.

Ref: Barr W, Smith A: Acute diarrhea. Am Fam Physician 2014;89(3):180-189.

Item 164

ANSWER: C

Statins are the drugs of choice to reduce perioperative cardiovascular risks (level of evidence 1). In addition to lowering cholesterol, they also reduce vascular inflammation, improve endothelial function, and stabilize atherosclerotic plaques. For the most protection, statins should be started 4 weeks prior to the procedure and continued after surgery (SOR A). β-Blockers and aspirin are beneficial, but less so than statins.

Ref: Holt NF: Perioperative cardiac risk reduction. Am Fam Physician 2012;85(3):239-246.

Item 165

ANSWER: A

Acetaminophen is the analgesic of choice for short-term treatment of mild to moderate pain in patients with stage 3–5 chronic kidney disease. Chronic nonterminal pain requires initial treatment with nonopioid analgesics. NSAIDs should be avoided because of the risk of nephrotoxicity.

Ref: Baumgarten M, Gehr T: Chronic kidney disease: Detection and evaluation. Am Fam Physician 2011;84(10):1138-1148. 2) Berland D, Rodgers P: Rational use of opioids for management of chronic nonterminal pain. Am Fam Physician 2012;86(3):252-258.

Item 166

ANSWER: C

Anxiety, shortness of breath, paresthesia, and carpopedal spasm are characteristic of hyperventilation. Respiratory alkalosis secondary to hyperventilation is diagnosed when arterial pH is elevated and pCO_2 is depressed. Low pH is characteristic of acidosis, either respiratory or metabolic, and elevated pH with elevated pCO_2 is characteristic of metabolic alkalosis with respiratory compensation.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, p 2185.

Item 167

ANSWER: B

This patient suffers from secondary amenorrhea (defined as the cessation of regular menses for 3 months or irregular menses for 6 months). The most common causes of secondary amenorrhea are polycystic ovary syndrome, primary ovarian failure, hypothalamic amenorrhea, and hyperprolactinemia. With a normal physical examination, negative pregnancy test, and no history of chronic disease, a hormonal workup is indicated, including TSH, LH, and FSH levels (SOR C).

A hormonal challenge with medroxyprogesterone to provoke withdrawal bleeding is used to assess functional anatomy and estrogen levels (SOR C). However, it has poor specificity and sensitivity for ovarian function and a poor correlation with estrogen levels.

Pelvic ultrasonography is indicated in the workup of primary amenorrhea to confirm the presence of a uterus and detect structural abnormalities of the reproductive organs. Likewise, karyotyping can be used for patients with primary amenorrhea, as conditions such as Turner's syndrome and androgen insensitivity syndrome are due to chromosomal abnormalities.

A CBC and metabolic panel would not be initial considerations in the workup of amenorrhea unless the patient has a known chronic disease which may affect the results.

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

Item 168

ANSWER: D

In the frail elderly, it may be difficult to distinguish relative starvation due to decreased or inadequate caloric intake from cachexia, which is due to an inflammatory response with elevated cytokines. Appetite is decreased early in cases of cachexia but remains normal in the early stages of starvation. Likewise, albumin decreases early in cases of cachexia and later in starvation. Due to the inflammatory changes, cachexia is resistant to refeeding.

Ref: Thomas DR: Distinguishing starvation from cachexia. Clin Geriatr Med 2002;18(4):883-891. 2) Messinger-Rapport BJ, Gammack JK, Thomas DR, Morley JE: Clinical update on nursing home medicine: 2013. J Am Med Dir Assoc 2013;14(12):860-876.

Item 169

ANSWER: A

This patient's symptoms are most consistent with a viral upper respiratory infection. There is no curative treatment so management should be focused on symptoms. Most over-the-counter cough and cold preparations, including the ingredients dextromethorphan and diphenhydramine, have no evidence of benefit and carry a risk of harm in children and should not be recommended. Albuterol is only helpful for cough in patients with wheezing. Buckwheat honey has limited evidence of effectiveness but appears to carry no risk of harm and may be recommended for symptom management.

Ref: Fashner J, Ericson K, Werner S: Treatment of the common cold in children and adults. Am Fam Physician 2012;86(2):153-159.

Item 170

ANSWER: E

Localized or generalized lymphadenopathy is a common complaint in children. Most cases are benign and related to infections or connective tissue disorders. Initial management involves watchful waiting for up to 4 weeks (SOR C). Evidence to support treatment with antibiotics is lacking and should be reserved for patients who show evidence of local inflammation. Malignancy should be excluded if lymphadenopathy persists beyond 4 weeks, or if other symptoms develop, such as fever, night sweats, weight loss, hepatosplenomegaly, or orthopnea. In this situation, the evaluation should include a CBC, blood smear, erythrocyte sedimentation rate, and chest radiography (SOR C).

Ref: Fragkandrea I, Nixon JA, Panagopoulou P: Signs and symptoms of childhood cancer: A guide for early recognition. Am Fam Physician 2013;88(3):185-192.

Item 171

ANSWER: B

In Southeast Asia, there is growing resistance of Campylobacter to fluoroquinolones, making azithromycin the treatment of choice. Typical treatment for adults is 500 mg daily for 3 days and in children 10 mg/kg/day for 3–5 days. Rifaximin can be used for noninvasive traveler's diarrhea but this patient's symptoms are most consistent with an invasive traveler's diarrhea. Metronidazole is used for Giardia and Entamoeba histolytica but not for Campylobacter. Ciprofloxacin can be used for Salmonella and Shigella.

Ref: Ross AG, Olds GR, Cripps AW, et al: Enteropathogens and chronic illness in returning travelers. N Engl J Med 2013;368(19):1817-1825. 2) Nair D: Travelers' diarrhea: Prevention, treatment, and post-trip evaluation. J Fam Pract 2013;62(7):356-361.

Item 172

ANSWER: E

All oral NSAIDs increase the risk of myocardial infarction (relative risk versus placebo from 1.5 for ibuprofen to 1.7 for celecoxib), with the exception of naproxen. Cardiac risks are greater in older patients, those with a history of cardiac events, and with higher dosages.

Ref: Fogleman CD: Analgesics for osteoarthritis. Am Fam Physician 2013;87(5):354-356.

Item 173

ANSWER: C

Gonorrhea continues to be a major cause of reproductive complications in women. Effective treatment is critical to control the spread of disease. Unfortunately, treatment has been complicated by the ability of Neisseria gonorrhoeae to develop resistance. The emergence of fluoroquinolone-resistant gonorrhea has led the Centers for Disease Control and Prevention to no longer recommend the use of fluoroquinolones for treatment of gonorrhea. Cephalosporins are currently the only recommended antibiotic, with ceftriaxone being the preferred agent.

Patients with gonorrhea often have a Chlamydia infection as well. It is recommended that they be treated for both, even with a negative test for Chlamydia. The recommended regimen for treatment of gonorrhea is ceftriaxone, 250 mg intramuscularly, and azithromycin, 1 g orally, or doxycycline, 100 mg twice daily for 7 days. All sexual partners in the previous 60 days should be treated as well.

Ref: Centers for Disease Control and Prevention (CDC): Update to CDC's Sexually Transmitted Diseases Treatment Guidelines, 2010: Oral cephalosporins no longer a recommended treatment for gonococcal infections. MMWR Morb Mortal Wkly Rep 2012;61(31):590-594.

Item 174

ANSWER: A

Oral antibiotics are preferred for community-acquired pneumonia if the patient is able to take them. The antibiotic of choice is amoxicillin for children 60 days to 5 years of age because of its activity against Streptococcus pneumoniae. Azithromycin is the antibiotic of choice for children 5–16 years old because of its activity against Mycoplasma pneumoniae and Chlamydia pneumoniae, and it can be used in children between the ages of 60 days and 5 years who are allergic to penicillin. Ceftriaxone is not a preferred antibiotic.

Ref: Stuckey-Schrock K, Hayes BL, George CM: Community-acquired pneumonia in children. Am Fam Physician 2012;86(7):661-667.

Item 175

ANSWER: A

This patient has a diagnosis of laryngitis (a viral infection causing inflammation of the vocal cords lasting less than 3 weeks). Symptoms of laryngitis can include loss/muffling of the voice, as well as other classic symptoms of an upper respiratory tract infection. A Cochrane study has shown that antibiotic therapy does not decrease the duration of laryngitis symptoms or hasten the return of vocal patency (SOR A). The U.S. Food and Drug Administration no longer recommends the use of over-the-counter cough and cold medications for children under the age of 2 years, because of their serious and potentially life-threatening adverse effects, including respiratory arrest due to hypopnea (SOR B).

Ref: Salisbury-Afshar E: Oral antihistamine/decongestant/analgesic combinations for the common cold. Am Fam Physician 2012;86(9):812-813. 2) Zoorob R, Sidani MA, Fremont RD, Kihlberg C: Antibiotic use in acute upper respiratory tract infections. Am Fam Physician 2012;86(9):817-822. 3) Lambert M: Practice guidelines: IDSA releases guidelines for management of acute bacterial rhinosinusitis. Am Fam Physician 2013;87(6):445-449.

Item 176

ANSWER: C

The signs of retinal vein occlusion typically include sudden painless loss of vision or distortion of vision. Redness is not typical and should cause the clinician to suspect an alternate diagnosis. Tortuous and dilated retinal veins are the most common finding on funduscopic examination. Patients also often have multiple cotton-wool spots, although these are not specific to retinal vein occlusion. An afferent pupillary defect often occurs on the affected side. Diabetes mellitus and hypertension are both risk factors for retinal vein occlusion, increasing the likelihood in this patient.

Ref: Tran KT, Qualm AS, Shannon MA: Retinal changes and visual impairment. Am Fam Physician 2010;81(1):73. 2) Kiire CA, Chong NV: Managing retinal vein occlusion. BMJ 2012;344:e499.

Item 177

ANSWER: C

The patient's history and physical findings are all consistent with a keloid, which is a benign overgrowth of scar tissue at sites of trauma to the skin, such as acne, burns, surgery, ear piercing, tattoos, and infections. Common locations include the earlobes, jawline, nape of the neck, scalp, chest, and back. Lesions are sometimes asymptomatic, but often are associated with hypersensitivity, pain, and pruritus. The incidence is higher in blacks, Hispanics, and Asians. Intralesional corticosteroid injections are first-line therapy. Silicone gel sheeting, topical imiquimod, and intralesional fluorouracil can be used when first-line therapy fails, but these methods are more often associated with recurrence. Laser therapy and surgical excision are associated with a high rate of recurrence when used as monotherapy.

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 178

ANSWER: A

Dextromethorphan, diphenhydramine, ibuprofen, and even fluoroquinolones are among the many agents that can cause a false-positive urine drug screen for opioids. Pseudoephedrine can cause a false-positive test for amphetamines (SOR A).

Ref: Tessier J, Downen M, Engel-Brower J, et al: Pitfalls & pearls for 8 common lab tests. J Fam Pract 2014;63(4):198-205.

Item 179

ANSWER: C

Bartonella henselae is the organism that causes cat-scratch disease. IgG titers over 1:256 strongly suggest active or recent infection. IgM elevation suggests acute disease but production of IgM is brief. Lymph node biopsy is reserved for cases where node swelling fails to resolve or the diagnosis is uncertain. The organism is difficult to culture and cultures are not recommended. Nontuberculous mycobacteria do not cause cat-scratch disease (SOR C).

Ref: Klotz SA, Ianas V, Elliott SP: Cat-scratch disease. Am Fam Physician 2011;83(2):152-155.

Item 180

ANSWER: D

The National Kidney Foundation defines chronic kidney disease (CKD) as a glomerular filtration rate (GFR) <60 mL/min/1.73 m^2, or evidence of kidney damage with or without a decreased GFR, for 3 or more months (SOR C). Individuals with CKD are at increased risk for serious cardiovascular disease events, especially if they have other comorbid conditions such as hypertension or diabetes mellitus.

It is important to have a multifactorial strategy for this patient that includes controlling his blood glucose and blood pressure in addition to continuing his antiplatelet therapy (SOR A). According to the U.S. Food and Drug Administration, metformin is contraindicated when a patient's serum creatinine is >1.5 mg/dL in men or >1.4 mg/dL in women (SOR C). This recommendation is based on the fact that metformin is cleared by the kidneys, and when the GFR is <60 mL/min/1.73 m^2, the clearance of metformin decreases by 75%. Because lactic acidosis caused by metformin is rare, some experts advocate for continued metformin use with higher serum creatinine levels. However, most recommendations agree it should be stopped when the GFR falls below 30 mL/min/1.73 m^2 (SOR C). This patient should stop his metformin, and his insulin should be adjusted appropriately to achieve optimal glycemic control. It is also important that he continue his antihypertensive and antiplatelet medications.

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) Lipska KJ, Bailey CJ, Inzucchi SE: Use of metformin in the setting of mild-to-moderate renal insufficiency. Diabetes Care 2011;34(6):1431-1437. 3) Nye HJ, Herrington WG: Metformin: The safest hypoglycaemic agent in chronic kidney disease? Nephron Clin Pract 2011;118(4):c380-c383. 4) National Kidney Foundation: KDOQI clinical practice guideline for diabetes and CKD: 2012 update. Am J Kidney Dis 2012;60(5):850-886. 5) Rivera JA, O'Hare AM, Harper GM: Update on the management of chronic kidney disease. Am Fam Physician 2012;86(8):749-754.

Item 181

ANSWER: C

The radiograph shows a distal radial fracture (Colles fracture) with a minimal amount of displacement or impaction. Such fractures can be treated with immobilization for 4–8 weeks. According to a Cochrane review, there is insufficient evidence from randomized trials to determine which methods of conservative treatment are most appropriate for the more common types of distal radial fractures in adults.The use of a single sugar-tong splint or a short arm cast is recommended for these fractures. Volar or dorsal splints are generally not recommended, as they do not restrict pronation and supination. Orthopedic referral is recommended in the presence of intra-articular fractures (radiocarpal, distal radioulnar), carpal bone injuries, and dislocation of the distal radioulnar joint. The other splints listed are not recommended for immobilizing distal radial fractures (SOR B).

Ref: Handoll HH, Madhok R: Conservative interventions for treating distal radial fractures in adults. Cochrane Database Syst Rev 2003;(2):CD000314. 2) Black WS, Becker JA: Common forearm fractures in adults. Am Fam Physician 2009;80(10):1096-1102. 3) Boyd AS, Benjamin HJ, Asplund C: Splints and casts: Indications and methods. Am Fam Physician 2009;80(5):491-499.

Item 182

ANSWER: A

Fiber is ineffective in the treatment of adult irritable bowel syndrome (IBS) (SOR A). Symptoms do improve, however, with several different medications and alternative therapies. Exercise, probiotics, antibiotics, antispasmodics, antidepressants, psychological treatments, and peppermint oil all have evidence that they may improve IBS symptoms (SOR B). A Cochrane review of 15 studies involving 922 patients found a beneficial effect from antidepressants with regard to improvement in pain and overall symptom scores compared to placebo. SSRIs used in these trials included citalopram, fluoxetine, and paroxetine, and tricyclic antidepressants included amitriptyline, desipramine, and imipramine. Buspirone, clonazepam, divalproex sodium, and risperidone have not been shown to be effective for symptom relief in IBS patients.

Ref: Wilkins T, Pepitone C, Alex B, Schade RR: Diagnosis and management of IBS in adults. Am Fam Physician 2012;86(5):419-426.

Item 183

ANSWER: A

The diagnosis of pelvic inflammatory disease (PID) is based primarily on the clinical evaluation. Significant consequences can occur if treatment is delayed. Physicians should therefore treat on the basis of clinical judgment without waiting for confirmation from laboratory or imaging tests (SOR B). No single symptom, physical finding, or laboratory test is sensitive or specific enough to definitively diagnose PID (SOR C). Clinical diagnosis alone based on the history, physical examination, and office laboratory results is 87% sensitive, transvaginal ultrasonography is 30% sensitive, and laparoscopy is 81% sensitive but unnecessarily invasive and not cost-effective. A study examining the diagnostic performance of CT in acute PID concluded that the overall sensitivity of CT is poor.

Ref: Jung SI, Kim YJ, Park HS, et al: Acute pelvic inflammatory disease: Diagnostic performance of CT. J Obstet Gynaecol Res 2011;37(3):228-235. 2) Gradison M: Pelvic inflammatory disease. Am Fam Physician 2012;85(8):791-796.

Item 184

ANSWER: E

Stimulants are preferred over nonstimulant medications for adults with attention-deficit disorder. Stimulant medications can aggravate psychosis, tics, or hypertension and are therefore contraindicated in patients with these problems. The main side effects of these drugs include insomnia, dry mouth, weight loss, headaches, and anxiety. They are classified as schedule II drugs due to their potential for abuse. The risk for serious adverse cardiovascular events is very low, although these drugs can increase resting heart rate and elevate both systolic and diastolic blood pressure.

Ref: Volkow ND, Swanson JM: Adult attention deficit-hyperactivity disorder. N Engl J Med 2013;369(20):1935-1944.

Item 185

ANSWER: E

Elevated blood pressure may have a protective effect in the initial period after an ischemic stroke, and studies have shown adverse outcomes when it is lowered in the acute period. Blood pressure usually will spontaneously decrease without treatment in the first several hours after presentation, and antihypertensive treatment should not be started in the first 24 hours after an acute stroke unless blood pressure exceeds 220/120 mm Hg, or treatment is warranted because of another medical condition such as acute myocardial infarction. Tighter blood pressure control becomes more important after the first 24 hours.

Ref: Bernheisel CR, Schlaudecker JD, Leopold K: Subacute management of ischemic stroke. Am Fam Physician 2011;84(12):1383-1388.

Item 186

ANSWER: B

Fortunately, emergency tracheotomy is not often necessary, but should one be necessary the best site for the incision is directly above the cricoid cartilage, through the cricothyroid membrane. Strictly speaking, this is not a tracheotomy, because it is actually above the trachea. However, it is below the vocal cords and bypasses any laryngeal obstruction. The thyrohyoid membrane lies well above the vocal cords, making this an impractical site. The area directly below the cricoid cartilage—which includes the second, third, and fourth tracheal rings, as well as the thyroid isthmus—is the preferred tracheotomy site under controlled circumstances, but excessive bleeding and difficulty finding the trachea may significantly impede the procedure in an emergency.

Ref: Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine: A Comprehensive Study Guide, ed 7. McGraw-Hill, 2011, pp 209-215. 2) Marx JA, Hockberger RS, Walls RM (eds): Rosen's Emergency Medicine: Concepts and Clinical Practice, ed 8. Elsevier Saunders, 2013, pp 8-10.

Item 187

ANSWER: B

Thiazide diuretics have proven efficacy in the treatment of hypertension in all age groups and sexes. When used as antihypertensive agents, the reduction in adverse cardiovascular outcomes equals that of β-blockers, calcium channel blockers, and ACE inhibitors. Successful thiazide treatment of hypertension is especially effective in preventing heart failure or strokes. Unlike the other options listed, thiazide diuretics have also been shown to slow cortical bone loss in postmenopausal females and to reduce the incidence of osteoporosis and hip fractures in those who take it continuously. This protective beneficial side effect disappears within 4 months following discontinuation of thiazide therapy. As with all medications there are potential disadvantages of thiazide use, including excessive urinary losses of potassium and sodium and possible increases in serum glucose levels.

Ref: Grossman E, Verdecchia P, Shamiss A, et al: Diuretic treatment of hypertension. Diabetes Care 2011;34(Suppl 2):S313-S319.

Item 188

ANSWER: A

This presentation is typical of either transient synovitis or septic arthritis of the hip. Because the conditions have very different treatment regimens and outcomes, it is important to differentiate the two. It is recommended that after plain films, the first studies to be performed should be a CBC and an erythrocyte sedimentation rate (ESR). Studies have shown that septic arthritis should be considered highly likely in a child who has a fever $>38.7°C$ (101.7°F), refuses to bear weight on the affected leg, has a WBC count $>12{,}000$ cells/mm^3, and has an ESR >40 mm/hr. If several or all of these conditions exist, aspiration of the hip guided by ultrasonography or fluoroscopy should be performed by an experienced practitioner. MRI may be helpful when the diagnosis is unclear based on the initial evaluation, or if other etiologies need to be excluded.

Ref: Sawyer JR, Kapoor M: The limping child: A systematic approach to diagnosis. Am Fam Physician 2009;79(3):215-224.

Item 189

ANSWER: C

Improving quality and efficiency in medicine is best done using a systems approach. One of the tools for improving a system of care is to utilize the "Plan-Do-Check-Act" cycle of continuous quality improvement. This cycle includes a planning stage to identify an improvement strategy. An implementation stage is followed by a time of evaluation for effectiveness. Finally, a decision is made to adopt or abandon the initial strategy. The cycle is then repeated as many times as necessary to attain the desired results.

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 85-90.

Item 190

ANSWER: B

The American College of Gastroenterology recommends transabdominal ultrasonography for all patients with acute pancreatitis (strong recommendation, low quality evidence). Contrast-enhanced CT and MRI should be reserved for patients who have an unclear diagnosis, are not clinically improving after 48–72 hours, or develop complications.

Ref: Panebianco NL, Jahnes K, Mills AM: Imaging and laboratory testing in acute abdominal pain. Emerg Med Clin North Am 2011;29(2):175-193. 2) Tenner S, Baillie J, DeWitt J, et al: American College of Gastroenterology guideline: Management of acute pancreatitis. Am J Gastroenterol 2013;108(9):1400-1415.

Item 191

ANSWER: A

Nausea and vomiting are common in early pregnancy and can affect the health of both the pregnant woman and the fetus. Mild cases of nausea and vomiting can be controlled with lifestyle and dietary changes. It is recommended that patients eat frequent small meals consisting of dry and bland foods, avoid spicy and fatty foods, eat high-protein snacks, and eat crackers in the morning before rising. If the nausea and vomiting are not controlled with dietary modifications, the first-line treatment is vitamin B_6, 10–25 mg, and doxylamine, 12.5 mg, 3–4 times per day. The other antiemetics can also be used in pregnancy, but vitamin B_6 and doxylamine should be tried first because of the balance of safety and efficacy.

Ref: American College of Obstetricians and Gynecologists: Nausea and vomiting of pregnancy. ACOG Practice Bulletin no 52, 2004 (reaffirmed 2013).

Item 192

ANSWER: E

Women over the age of 50 require at least 1200 mg of calcium a day. Inadequate calcium intake is common, particularly in older women, and is associated with increased bone loss and an increased fracture risk. Supplements should be considered when dietary intake is inadequate. Calcium carbonate is the least expensive and most commonly used supplement, but it is constipating and stomach acid improves its absorption. Calcium gluconate and calcium lactate are rarely used for fracture prevention or calcium supplementation. Bone meal and oyster shell calcium are primarily composed of calcium carbonate but may contain lead or other contaminants since they are derived from natural sources. In addition, their absorption without stomach acid is erratic.

Calcium citrate is less dependent on stomach acidity for absorption and it may be used with long-term gastric acid suppression agents. It may be taken without regard to food or meals.

Ref: Bauer DC: Calcium supplements and fracture prevention. N Engl J Med 2013;369(16):1537-1543.

Item 193

ANSWER: D

This patient has severe hyponatremia manifested by confusion and seizures, a life-threatening situation warranting urgent treatment with hypertonic (3%) saline. The serum sodium level should be raised by only 1–2 mEq/dL per hour, to prevent serious neurologic complications. Saline should be used only until the seizures stop. Some authorities recommend concomitant use of furosemide, especially in patients who are likely to be volume overloaded, as this patient is, but it should not be used alone. The arginine vasopressin antagonist conivaptan is approved for the treatment of euvolemic or hypervolemic hyponatremia, but not in patients who are obtunded or in a coma, or who are having seizures.

Ref: Ellison DH, Berl T: The syndrome of inappropriate antidiuresis. N Engl J Med 2007;356(20):2064-2072. 2) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 348-349, 2910-2911.

Item 194

ANSWER: E

Bupropion should not be used with MAO inhibitors or in patients with seizure or eating disorders. The other medical conditions listed are not contraindications, and bupropion can be used for the treatment of depression.

Ref: Fiore MC, Baker TB: Treating smokers in the health care setting. N Engl J Med 2011;365(13):1222-1231.

Item 195

ANSWER: B

Falls are the leading cause of injury in adults age 65 and older. Between 30% and 40% of community-dwelling adults in this age group fall at least once per year.

Ref: Moyer VA; US Preventive Services Task Force: Prevention of falls in community-dwelling older adults: US Preventive Services Task Force recommendation statement. Ann Intern Med 2012;157(3):197-204.

Item 196

ANSWER: C

It is estimated that particulate air pollution caused 100,000 deaths in the United States in 2010. The United States Environmental Protection Agency (EPA) publishes air quality data in the form of the Air Quality Index (AQI), which is calculated based on measured levels of the five major regulated air pollutants (surface ozone, particulate matter, sulfur dioxide, carbon monoxide, and nitrogen dioxide). AQI is reported as a number from 1 to 300, with corresponding colors ranging from green (1–50 or "good") to maroon (200–300 or "very unhealthy"). Levels of particulate air pollution are consistently associated with exacerbations of cardiovascular and pulmonary disease, as well as other illnesses. Physicians should counsel people with chronic heart and lung disease like this patient to avoid heavy or prolonged exertion when AFI levels are >100 (SOR C).

Ozone production is increased by heat, sunlight, and humidity and is generally worse in the warmer months. Motorized vehicles are known to produce carbon monoxide, nitrogen dioxide, and particulate matter, and these pollutants are known to be present at higher concentrations near busy roads. California has responded to this concern by banning construction of schools within 500 feet of major highways. Recirculating air conditioning is likely to reduce indoor exposure to ambient air pollution when levels are unsafe outside.

Ref: Laumbach RJ: Outdoor air pollutants and patient health. Am Fam Physician 2010;81(2):175-180. 2) Abelsohn A, Stieb DM: Health effects of outdoor air pollution: Approach to counseling patients using the Air Quality Health Index. Can Fam Physician 2011;57(8):881-887. 3) US Burden of Disease Collaborators: The state of US health, 1990–2010: Burden of diseases, injuries, and risk factors. JAMA 2013;310(6):591-608.

Item 197

ANSWER: C

Naltrexone is given in 380-mg monthly injections for the chronic treatment of alcohol and opioid dependence. It is an antagonist of μ-opioid receptors, and blocks the pain relief properties of opioid agonists. Regional anesthesia and/or nonopioid analgesics are indicated when urgent pain relief is needed in a patient on long-term naltrexone therapy. Ketorolac is the only medication listed that is not an opioid agonist.

Ref: Shapiro B, Coffa D, McCance-Katz EF: A primary care approach to substance misuse. Am Fam Physician 2013;88(2):113-121.

Item 198

ANSWER: D

This patient has symptoms and signs consistent with a spinal cord lesion. With rapidly progressing symptoms of paraparesis and sensory abnormalities in a diabetic patient, an epidural abscess is likely. This is considered a neurologic emergency, because a permanent deficit can result if the problem is not addressed promptly. MRI of the thoracic spine, which is the level of her deficits, is the best next step in the evaluation of this patient. Intravenous antibiotics are a necessary treatment, along with surgical debridement, if the MRI demonstrates the underlying problem. Thoracic spinal films are not helpful in this situation. Neither antiplatelet therapy nor corticosteroids are indicated for a spinal epidural abscess.

Ref: Daroff RB, Fenichel GM, Jankovic J, Mazziotta JC (eds): Bradley's Neurology in Clinical Practice, ed 6. Elsevier Saunders, 2012, pp 1263-1265. 2) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, p 3370.

Item 199

ANSWER: A

Echocardiography is the best study for detecting right ventricular (RV) dysfunction and also allows for estimation of pulmonary artery pressure. Abnormal findings on the physical examination or EKG may be the earliest indicators of RV dysfunction, but these may also appear normal. CT will show RV enlargement, which is predictive of 30- and 90-day mortality, although it is not as quantitative as the EKG (SOR A).

Ref: Piazza G: Submassive pulmonary embolism. JAMA 2013;309(2):171-180.

Item 200

ANSWER: D

Persons being evaluated for chronic fatigue should be assessed for comorbid depression, sleep disturbance, and pain (SOR C). According to the Centers for Disease Control and Prevention, the initial evaluation should include a urinalysis, a CBC, a metabolic panel, and measurement of TSH, antinuclear antibody, C-reactive protein, rheumatoid factor, and phosphorus (SOR C). In addition, Britain's National Institute for Health and Clinical Excellence (NICE) guidelines recommend immunoglobulin A endomysial antibodies to screen for celiac disease. The etiology of chronic fatigue syndrome is not clearly defined and is likely multifactorial.

The initial treatment should be cognitive-behavioral therapy (CBT) or graded exercise therapy, or both (SOR A). CBT has been shown to decrease anxiety, improve work and social adjustment, decrease postexertional malaise, and improve overall fatigue (SOR A). There is not good evidence to support the use of hydrocortisone, fludrocortisone, or antiviral medications in the treatment of chronic fatigue syndrome. Other treatments that do not appear effective include melatonin, citalopram, methylphenidate, and galantamine.

White fluorescent light therapy has been shown to be effective for treating seasonal affective disorder, but not for chronic fatigue syndrome.

Ref: Price JR, Mitchell E, Tidy E, Hunot V: Cognitive behaviour therapy for chronic fatigue syndrome in adults. Cochrane Database Syst Rev 2008;(3):CD001027. 2) Yancey JR, Thomas SM: Chronic fatigue syndrome: Diagnosis and treatment. Am Fam Physician 2012;86(8):741-746.

Item 201

ANSWER: A

This patient has mild plaque psoriasis. Topical corticosteroids, vitamin D analogs, and tazarotene are effective treatments for mild psoriasis (SOR A). Antimicrobials, anitfungals, diclofenac, and salicylic acid are not effective treatments.

Ref: Weigle N, McBane S: Psoriasis. Am Fam Physician 2013;87(9):626-633.

Item 202

ANSWER: B

Increased intake of dietary fiber and increased exercise have been shown to prevent recurrences of diverticulitis (SOR B). Weight loss has been shown to be effective in persons with a body mass index of 30 kg/m^2 or higher but this patient is underweight and should not be counseled to lose weight (SOR B). There is no evidence that avoiding nuts, corn, or popcorn decreases the risk of diverticulitis (SOR B). Risk factors for diverticulitis include the use of NSAIDs, but not acetaminophen.

Ref: Strate LL, Liu YL, Aldoori WH, Giovannucci EL: Physical activity decreases diverticular complications. Am J Gastroenterol 2009;104(5):1221-1230. 2) Strate LL, Liu YL, Aldoori WH, et al: Obesity increases the risks of diverticulitis and diverticular bleeding. Gastroenterology 2009;136(1):115-122.e1. 3) Wilkins T, Embry K, George R: Diagnosis and management of acute diverticulitis. Am Fam Physician 2013;87(9):612-620.

Item 203

ANSWER: C

Acute epididymitis is often the result of descending infection caused by urinary tract pathogens. When the infection involves the epididymis and testis (epididymo-orchitis), sonography will frequently show an enlarged heterogeneous testis with increased color flow.

In sexually active men under age 35, acute epididymitis is caused most frequently by Chlamydia trachomatis and less commonly by Neisseria gonorrhoeae. Clinical features suggestive of urethritis may be absent (subclinical urethritis). Epididymitis in men who have practiced unprotected insertive rectal intercourse is often caused by Enterobacteriaceae. These men usually do not have urethritis but do have bacteriuria. Treatment of acute epididymo-orchitis consists of administering appropriate antibiotics for the treatment of both gonorrhea and Chlamydia infections. Additional antibiotic coverage may be indicated based on the patient's sexual history.

Unilateral absent flow on color and spectral Doppler sonography is a highly sensitive and specific finding in acute testicular torsion and emergent urology referral is indicated. Heterogeneous echotexture of the testis is a common finding in sonograms performed to evaluate acute scrotal pain, regardless of the cause. There is no role for repeat ultrasonography or watchful waiting in patients with acute epididymo-orchitis (SOR C).

Ref: Stengel JW, Remer EM: Sonography of the scrotum: Case-based review. AJR Am J Roentgenol 2008;190(6 Suppl):S35-S41. 2) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 1095-1111.

Item 204

ANSWER: C

This patient has symptoms consistent with dengue fever, which is endemic in more than 100 tropical countries. Dengue fever should always be suspected in patients returning from an endemic area with spiking fevers and leukopenia. The dengue virus is an arbovirus that is transmitted by the Aedes mosquito. The incubation period is typically 4–8 days (range 3–14). Some patients with dengue fever may be asymptomatic or have a mild febrile illness, but it can also be very severe and manifest as dengue hemorrhagic fever or dengue shock syndrome. Dengue hemorrhagic fever is defined by thrombocytopenia, hemorrhagic manifestations, and plasma leakage.

Patients with dengue fever may have leukopenia, thrombocytopenia, hemoconcentration, elevated CPK, and elevated liver enzymes. Treatment consists of supportive care and avoidance of NSAIDs and aspirin due to their anticoagulant properties. There is no vaccine. The best way to prevent dengue is to wear protective clothing, use bed nets, and apply repellents containing 30%–50% DEET.

The presentation of yellow fever is very similar to dengue, but it is usually associated with elevated bilirubin levels and jaundice. Typhoid fever has a presentation similar to that of a number of diseases. It has a gradual onset of fever that rises in a stepwise fashion. Other symptoms include headache, arthralgias, pharyngitis, constipation, anorexia, and abdominal pain. As the disease progresses a number of other symptoms may develop, including skin lesions. Influenza can have a clinical presentation similar to dengue fever but does not cause thrombocytopenia and hemorrhagic manifestations. Hepatitis A presents with anorexia, nausea and vomiting, fatigue, malaise, myalgias, and a low-grade fever. It then usually progresses to an icteric phase characterized by dark urine, pale stools, and jaundice.

Ref: Feder HM Jr, Mansilla-Rivera K: Fever in returning travelers: A case-based approach. Am Fam Physician 2013;88(8):524-530.

Item 205

ANSWER: E

Patients with mild asthma are often undertreated. Constant inhaled corticosteroids improve both asthma control and quality of life. Inhaled albuterol is useful as a quick treatment for acute symptoms in patients with mild asthma. Oral prednisone causes many side effects and is best for chronic use in patients whose symptoms are not controlled by other means. Cromolyn sodium has a good side-effect profile, but is not as effective as inhaled corticosteroids. Inhaled salmeterol, when used chronically, increases the risk of asthma-related death.

Ref: Bel EH: Mild asthma. N Engl J Med 2013;369(6):549-557.

Item 206

ANSWER: C

Stretching is often included in comprehensive treatment programs for musculoskeletal injuries and chronic conditions, making the determination of how much of the benefit is derived specifically from the stretching component difficult. Trials using different stretching techniques have demonstrated measurable benefit from a tailored stretching program for each of the options listed, with the exception of joint contracture. This mobility-impairing condition results from post-healing shortness of noncontractile tissues that are not easily released with stretching.

When applied to healing tissues, stretching is thought to increase muscle length and align collagen fibers, thereby increasing range of motion and flexibility post healing. A program that includes static, dynamic, and proprioceptive neuromuscular facilitation (PNF) stretching increases range of motion post knee replacement. Static and PNF stretching increases range of motion in osteoarthritis of the knee. A program of precontraction and static stretching increases hamstring flexibility following a strain. A yearlong stretching program for relief of chronic neck pain has been shown to have a benefit equal to that of strengthening exercises or manual therapy.

Ref: Page P: Current concepts in muscle stretching for exercise and rehabilitation. Int J Sports Phys Ther 2012;7(1):109-119.

Item 207

ANSWER: A

Any child younger than 29 days with a fever should undergo a complete sepsis workup and be admitted for observation until culture results are obtained or the source of the fever is found and treated (SOR A). The most common bacterial organisms in this age group are group B Streptococcus and Escherichia coli. However, many other pathogens have been known to cause sepsis; therefore, broad empiric coverage with ampicillin and cefotaxime is recommended (SOR B). Gentamicin is commonly used, but should be used in combination with ampicillin. Vancomycin is not recommended as first-line treatment unless the child has evidence of a soft-tissue infection suspected to be methicillin resistant (SOR C). Ciprofloxacin and clindamycin are not indicated treatments in this case.

Ref: Sur DK, Bukont EL: Evaluating fever of unidentifiable source in young children. Am Fam Physician 2007;75(12):1805-1811. 2) Byington CL, Reynolds CC, Korgenski K, et al: Costs and infant outcomes after implementation of a care process model for febrile infants. Pediatrics 2012;130(1):e16-e24. 3) Pantell RH: Febrile infants: Aligning science, guidelines, and cost reduction with quality of individualized care. Pediatrics 2012;130(1):e199-e200.

Item 208

ANSWER: E

Because of an increased risk of infection, simple non-tense areas of clear blistering in a frostbitten patient are best left intact. Tense or hemorrhagic blisters may be carefully aspirated, but only under sterile conditions. Rapid rewarming of affected areas is best done in a whirlpool bath containing a mild antiseptic at 40°C–41°C. Freezing injuries are extremely painful and analgesics are indicated. Vigorous rubbing of affected tissue is contraindicated, as it may lead to further tissue loss.

Ref: Hallam MJ, Cubison T, Dheansa B, Imray C: Managing frostbite. BMJ 2010;341:c5864.

Item 209

ANSWER: D

This patient's symptoms and examination meet the diagnostic criteria for generalized anxiety disorder. Based on the best evidence, pharmacologic agents that are beneficial for treating generalized anxiety disorder in adults include antidepressants such as imipramine, duloxetine, paroxetine, sertraline, escitalopram, and venlafaxine. Buspirone and hydroxyzine are likely to be beneficial but are supported by less convincing evidence and can have unpleasant adverse effects. The antipsychotics and benzodiazepines must be evaluated in terms of trade-offs between benefits and harms. Quetiapine is approved for use in adults as add-on treatment in major depressive disorder for patients who do not have an adequate response to antidepressant therapy alone, for acute depressive episodes in bipolar disorder, for acute manic or mixed episodes in bipolar disorder either alone or with lithium or divalproex, for long-term treatment of bipolar disorder with lithium or divalproex, and for schizophrenia.

Ref: Gale CK, Millichamp J: Generalized anxiety disorder. Am Fam Physician 2013;87(2):122-124.

Item 210

ANSWER: B

Children who reach the weight or height limit of their forward-facing child safety seat should use a belt-positioning booster seat until the seat belt fits properly, typically when the child is 145 cm (57 in) tall and between 8 and 12 years of age (SOR C). All children younger than 13 years should ride in the rear seats of vehicles for optimal protection (SOR C). All infants and toddlers should ride in a rear-facing child safety seat until they are 2 years of age or until they reach the weight or height limit recommended by the seat's manufacturer (SOR C).

Ref: Durbin DR: New recommendations on motor vehicle safety for child passengers. Am Fam Physician 2013;87(7):472-474. 2) Theurer WM, Bhavsar AK: Prevention of unintentional childhood injury. Am Fam Physician 2013;87(7):502-509.

Item 211

ANSWER: A

Stevens-Johnson syndrome is a rare, potentially life-threatening condition. There are many potential causes, including infection, vaccines, systemic disease, physical agents, food, and drugs. Allopurinol is the only drug listed that is a potential causative agent. Other drugs commonly cited as causes include antibiotics, antiepileptics, and NSAIDs. Of these, antibiotics are the most common alleged cause of Stevens-Johnson syndrome.

Ref: Roujeau JC, Stern RS: Severe adverse cutaneous reactions to drugs. N Engl J Med 1994;331(19);1272-1285. 2) Letko E, Papaliodis DN, Papaliodis GN, et al: Stevens-Johnson syndrome and toxic epidermal necrolysis: A review of the literature. Ann Allergy Asthma Immunol 2005;94(4):419-436. 3) Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, p 153.

Item 212

ANSWER: A

Level A evidence shows that supplementation with fish oil (omega-3 fatty acids) decreases triglycerides and very low–density lipoprotein (VLDL cholesterol) but can increase LDL-cholesterol. Treatment with fish oil has not been shown to decrease cardiovascular events, total mortality, or cancer incidence.

Ref: Hooper L, Thompson RL, Harrison RA, et al: Omega-3 fatty acids for prevention and treatment of cardiovascular disease. Cochrane Database Syst Rev 2004;(4):CD003177. 2) Hartweg J, Perera R, Montori V, et al: Omega-3 polyunsaturated fatty acids (PUFA) for type 2 diabetes mellitus. Cochrane Database Syst Rev 2008;(1):CD003205. 3) Narla R, Peck SB, Qiu KM: Fish oil for treatment of dyslipidemia. Am Fam Physician 2014;89(4):288, 290.

Item 213

ANSWER: D

This patient has polymyalgia rheumatica, based on her history and elevated erythrocyte sedimentation rate. The initial treatment is prednisone, 15 mg per day with a slow taper over 1–2 years (SOR C). Alternative treatment includes intramuscular methylprednisolone, 120 mg every 3 weeks.

Ref: Caylor TL, Perkins A: Recognition and management of polymyalgia rheumatica and giant cell arteritis. Am Fam Physician 2013;88(10):676-684.

Item 214

ANSWER: D

Zoster vaccine, a live attenuated virus vaccine, is contraindicated in this patient due to her immunocompromised state. The other vaccines listed are safe and particularly recommended for patients with inflammatory bowel disease, given their increased susceptibility to infections.

Immunosuppression is defined as:

- Treatment with glucocorticoids (treatment with the equivalent of 20 mg/day of prednisone for 2 weeks or more, and discontinuation within the previous 3 months)
- Ongoing treatment with effective doses of 6-MP/azathioprine or discontinuation within the previous 3 months
- Treatment with methotrexate or discontinuation within the previous 3 months
- Treatment with infliximab or discontinuation within the previous 3 months
- Significant protein-calorie malnutrition

Ref: Wasan SK, Baker SE, Skolnik PR, Farraye FA: A practical guide to vaccinating the inflammatory bowel disease patient. Am J Gastroenterol 2010;105(6):1231–1238.

Item 215

ANSWER: B

The diagnosis of acute kidney injury (AKI) is based on elevated serum creatinine levels and is often associated with a reduction in urine output (SOR C). The causes of AKI are commonly divided into three categories: prerenal, intrinsic renal, and postrenal (SOR C). Prerenal AKI is most commonly due to decreased renal perfusion, often because of volume depletion. In addition to vomiting and diarrhea, overuse of diuretics can lead to prerenal AKI. Intrinsic renal AKI is caused by a process within the kidneys. Glomerulonephritis and acute tubular necrosis are types of intrinsic AKI. Postrenal AKI refers to a process distal to the kidneys and is most often caused by inadequate drainage of urine. Neurogenic bladder and prostate hypertrophy contribute to extrarenal obstruction.

Ref: Mehta RL, Kellum JA, Shah SV, et al: Acute Kidney Injury Network: Report of an initiative to improve outcomes in acute kidney injury. Crit Care 2007;11(2):R31. 2) Hoste EA, Schurgers M: Epidemiology of acute kidney injury: How big is the problem? Crit Care Med 2008;36(4 Suppl):S146-S151. 3) Rahman M, Shad F, Smith MC: Acute kidney injury: A guide to diagnosis and management. Am Fam Physician 2012;86(7):631-639.

Item 216

ANSWER: A

This infant has the typical findings of chlamydial pneumonia, which usually develops 1–3 months after birth and should be suspected in a young infant who has tachypnea, a staccato cough, and no fever (SOR A). Radiographs often show hyperinflation and infiltrates, and a CBC will reveal eosinophilia.

Ref: Mishori R, McClaskey EL, WinklerPrins VJ: Chlamydia trachomatis infections: Screening, diagnosis, and management. Am Fam Physician 2012;86(12):1127-1132.

Item 217

ANSWER: A

In mentally handicapped patients it is important to avoid the use of psychotropic medications for managing new behaviors until an attempt has been made to rule out potential medical and environmental causes, except in patients with a high potential for harm to themselves or others. The underlying cause of behaviors may be an undiagnosed medical condition, such as tooth pain, a urinary tract infection, or an electrolyte disturbance. It is also important to consider environmental factors such as loss of a regular staff member, a change in living environment, or family dynamics. If pharmacologic intervention is deemed necessary the treatment should be aimed at minimizing emotional trauma and maximizing community integration. Medication to restrict behaviors should not be used on a long-term basis. The history in this patient does not suggest that imaging is needed.

Ref: Prater CD, Zylstra RG: Medical care of adults with mental retardation. Am Fam Physician 2006;73(12):2175-2183. 2) Lacy B: Treatment of aggression in patients with mental retardation. Am Fam Physician 2007;75(5):622-624.

Item 218

ANSWER: D

In pregnant women not known to have diabetes mellitus, screening for gestational diabetes mellitus should be done at 24–28 weeks gestation. There are two acceptable screening strategies. The one-step 2-hour 75-g oral glucose tolerance test should be performed in the morning after a minimum 8-hour fast. The diagnosis of gestational diabetes mellitus is made if the fasting plasma glucose level is ≥92 mg/dL, if the level at 1 hour is ≥180 mg/dL, or if the level at 2 hours is ≥153 mg/dL.

A two-step approach may also be used, consisting of a nonfasting 1-hour 50-g oral glucose tolerance test. If the 1-hour glucose level is ≥140 mg/dL, a 3-hour 100-mg glucose tolerance test should be performed. (ACOG recommends 135 mg/dL in ethnic minorities with a higher risk of diabetes mellitus, and some experts recommend 130 mg/dL.) The 3-hour test should be performed when the patient is fasting. A diagnosis of gestational diabetes is made when at least two of the following four plasma glucose levels are met or exceeded:

	Carpenter/Coustan	National Diabetes Group
Fasting	95 mg/dL	105 mg/dL
1h	180 mg/dL	190 mg/dL
2h	155 mg/dL	165 mg/dL
3h	140 mg/dL	145 mg/dL

Women with risk factors for diabetes mellitus should also be screened for undiagnosed diabetes at their first prenatal visit.

Ref: American Diabetes Association: Standards of medical care in diabetes—2014. Diabetes Care 2014;37(Suppl 1):S14-S80.

Item 219

ANSWER: D

Common indications for CT without contrast include suspected stroke within the first 3 hours of symptom onset; closed head injury; diffuse lung disease; chronic dyspnea; soft-tissue swelling, infection, or trauma of the extremities; suspected kidney stone; and suspected spinal trauma. Evaluation using contrast-enhanced CT is indicated in the following common scenarios: acute appendicitis, cancer staging, diverticulitis, suspected complications of inflammatory bowel disease, pancreatitis, and suspected pulmonary embolism.

Ref: Rawson JV, Pelletier AL: When to order a contrast-enhanced CT. Am Fam Physician 2013;88(5):312-316.

Item 220

ANSWER: D

Vasomotor symptoms associated with menopause are best controlled with oral or topical estrogens. However, one of the known risks of systemic estrogen treatment is an increased rate of developing deep vein thrombosis (DVT). This risk is not lessened by the addition of progestin. Bio-identical hormones are not FDA-regulated and are highly variable in their hormonal potency. For this reason their efficacy and safety cannot be determined. Vaginal estrogen treatment results in very little circulating estrogen. Its use has not been associated with venous thrombosis, but it does not provide relief from vasomotor symptoms. A Cochrane meta-analysis reviewed multiple small studies using phytoestrogens and found no benefit for control of menopausal symptoms.

Oral SSRIs and SNRIs, including venlafaxine, are effective for menopausal vasomotor symptoms, and paroxetine is FDA-approved for this purpose without an associated risk for developing a DVT. Other nonhormonal treatments that have evidence of benefit include gabapentin and clonidine.

Ref: Taylor HS, Manson JE: Update in hormone therapy use in menopause. J Clin Endocrinol Metab 2011;96(2):255-264. 2) ACOG Practice Bulletin No. 141: Management of menopausal symptoms. Obstet Gynecol 2014;123(1):202-216.

Item 221

ANSWER: B

Diastolic dysfunction is now recognized as an important cause of heart failure. It is due to left ventricular hypertrophy as a response to chronic systolic hypertension. The ventricle becomes stiff and unable to relax or fill adequately, thus limiting its forward output. The typical patient is an elderly person who has systolic hypertension, left ventricular hypertrophy, and a normal ejection fraction (50%–55%).

Ref: Tzanetos K, Leong D, Wu RC: Office management of patients with diastolic heart failure. CMAJ 2009;180(5):520-527. 2) King M, Kingery J, Casey B: Diagnosis and evaluation of heart failure. Am Fam Physician 2012;85(12):1161-1168.

Item 222

ANSWER: E

This patient has carpal tunnel syndrome. Initial conservative approaches for mild to moderate symptom relief include full-time splinting for 8 weeks (SOR B) and oral corticosteroids. However, studies suggest that local corticosteroid injections offer symptom relief for 1 month longer than oral corticosteroid therapy and some individuals experience relief for up to 1 year. Severe or chronic symptoms usually require surgical intervention for nerve decompression. Physical therapy is not recommended, and full rest is unlikely in a person in a high-risk occupation for overuse syndromes.

Ref: Stephens MB, Beutler AI, O'Connor FG: Musculoskeletal injections: A review of the evidence. Am Fam Physician 2008;78(8):971-976. 2) LeBlanc KE, Cestia W: Carpal tunnel syndrome. Am Fam Physician 2011;83(8):952-958.

Item 223

ANSWER: E

Morphine is the best first choice for chronic potent opioid therapy (SOR B). It is reliable and inexpensive, and equivalent doses can be easily calculated if the patient must later be switched to another medication. Transdermal fentanyl and hydromorphone are reasonable second-line choices; however, they are not recommended as first-line therapy because they are expensive and can produce tolerance relatively quickly (SOR B). Methadone is another second-line option and tolerance is usually less of a problem. It is inexpensive and long-acting but also has unique pharmacokinetics. It has a very long elimination half-life, and its morphine-equivalent equianalgesic conversion ratio increases as dosages increase. Methadone can prolong the QT interval, especially in patients who are taking other QT-prolonging medications (SOR B). Buprenorphine is a partial opioid agonist that is usually used for treatment of patients with opioid addictions. Although it can be effective for treatment of pain, it is expensive and requires special prescriber training, so it is currently not recommended as a first-line agent for treatment of chronic pain (SOR C).

Ref: Berland D, Rodgers P: Rational use of opioids for management of chronic nonterminal pain. Am Fam Physician 2012;86(3):252-258.

Item 224

ANSWER: E

The main use of atropine in cases of cardiac arrest is for symptomatic bradycardia. It has little effect with complete heart block and Mobitz type II atrioventricular block. It is not recommended or effective for cardiac arrest with pulseless electrical activity or in cases of asystole. It has been removed from these algorithms by the ACLS committee. During an acute myocardial infarction or acute cardiac ischemia, an increase in heart rate may increase the amount of ischemia.

Ref: Sinz E, Navarro K, Soderberg ES (eds): Advanced Cardiovascular Life Support: Provider Manual. American Heart Association, 2011.

Item 225

ANSWER: E

This patient most likely has schizotypal personality disorder. These patients have problems with social and interpersonal relationships, which are marked by significant anxiety and discomfort, and they also exhibit odd thinking, speech, and perceptions. This disorder is classified as being in the cluster A personality disorder group. Patients with disorders in this group exhibit odd or eccentric personalities, and the group includes paranoid, schizoid, and schizotypal personality disorders.

Cluster B disorders are characterized by dramatic, emotional, or erratic personalities, and include antisocial, borderline, histrionic, and narcissistic personality disorders. Cluster C disorders include avoidant, obsessive-compulsive, and dependent personality disorders. Patients with disorders in this group exhibit mainly anxious or fearful behaviors.

Ref: Angstman KB, Rasmussen NH: Personality disorders: Review and clinical application in daily practice. Am Fam Physician 2011;84(11):1253-1260.

Item 226

ANSWER: E

This patient has a restrictive pattern on pulmonary function testing as evidenced by an FEV_1/FVC ratio $>70\%$ and an FVC below the lower limits of normal. Of the diagnostic options listed, idiopathic pulmonary fibrosis is the only restrictive cause of lung disease. All of the other conditions listed are obstructive causes of lung disease.

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

Item 227

ANSWER: D

Metronidazole, vancomycin, and fidaxomicin are the three medications recommended for treatment of Clostridium difficile colitis infections. Only metronidazole is effective intravenously, because its biliary excretion and possibly exudation through the colonic mucosa allows it to reach the colon via the bloodstream. Treatment for this condition with vancomycin and fidaxomicin is oral. Imipenem/cilastatin, ciprofloxacin, and meropenem have not been shown to be effective for C. difficile infection.

Ref: Knight CL, Surawicz CM: Clostridium difficile infection. Med Clin North Am 2013;97(4):523-536.

Item 228

ANSWER: D

Risk factors for stillbirth include advanced maternal age, smoking $>$ ½ pack of cigarettes a day, congenital anomalies, and a BMI >30 kg/m^2. Excessive exercise has not been shown to increase the risk for stillbirth.

Ref: Van Dinter MC, Graves L: Managing adverse birth outcomes: Helping parents and families cope. Am Fam Physician 2012;85(9):900-904.

Item 229

ANSWER: D

This patient suffers from urge urinary incontinence, defined as the loss of urine accompanied or preceded by a strong impulse to void. It may be accompanied by frequency and nocturia, and is common in older adults. Conservative therapies such as behavioral therapy, including bladder training and lifestyle modification, should be the first-line treatment for both stress and urge urinary incontinence (SOR C). Pharmacologic interventions should be used as an adjunct to behavioral therapies for refractory urge incontinence (SOR C). Vaginal inserts, such as pessaries, can be used for treating stress incontinence but not urge incontinence.

Ref: Hersh L, Salzman B: Clinical management of urinary incontinence in women. Am Fam Physician 2013;87(9):634-640.

Item 230

ANSWER: C

Slipped capital femoral epiphysis (SCFE) typically occurs in young adolescents during the growth spurt, when the femoral head is displaced posteriorly through the growth plate. Physical activity, obesity, and male sex are predisposing factors for the development of this condition. There is pain with physical activity, most commonly in the upper thigh anteriorly, but one-third of patients present with referred lower thigh or knee pain, which can make accurate and timely diagnosis more difficult.

The hallmark of SCFE on examination is limited internal rotation of the hip. Specific to SCFE is the even greater limitation of internal rotation when the hip is flexed to 90°. No other pediatric condition has this physical finding, which makes the maneuver very useful in children with lower extremity pain. Orthopedic consultation is advised if SCFE is suspected.

Hip extension and abduction are also limited in SCFE, but these findings are nonspecific. Displacement of the patella is not associated with SCFE.

Ref: Sawyer JR, Kapoor M: The limping child: A systematic approach to diagnosis. Am Fam Physician 2009;79(3):215-224.

Item 231

ANSWER: B

Hearing loss and tinnitus are both common and typically benign complaints in primary care. If both are present in only one ear, the diagnosis of acoustic neuroma, also known as vestibular schwannoma, should be considered. Acoustic neuroma is a slow-growing benign tumor of the Schwann cells surrounding the vestibular cochlear (8th cranial) nerve. Hearing loss associated with acoustic neuroma is typically slow in onset. The presence of vertigo on the affected side is another symptom of abnormal function of the vestibular cochlear nerve and should further raise suspicion of acoustic neuroma or another process affecting that nerve. MRI is the preferred imaging study for diagnosing acoustic neuroma (SOR A). Bilateral hearing loss is more common and is less likely to be caused by an intracranial mass. Exposure to loud sounds can cause hearing loss unrelated to an intracranial mass. Pain and otorrhea suggest infection rather than an intracranial tumor.

Ref: McDonald R: Acoustic neuroma: What the evidence says about evaluation and treatment. J Fam Pract 2011;60(6):E1-E4.

Item 232

ANSWER: E

A trial of cilostazol is recommended by the American College of Cardiology and the American Heart Association as initial treatment for peripheral arterial disease (PAD) that limits the lifestyle of patients without heart failure (SOR A). Cilostazol has been shown to increase walking distance and improve health-related quality of life (level of evidence 2). Although neither aspirin nor clopidogrel improves claudication symptoms, antiplatelet therapy is recommended to reduce the risk of myocardial infarction, stroke, or vascular death in patients with symptomatic PAD. Warfarin has not been shown to improve cardiovascular outcomes in patients with PAD, but may increase bleeding without clinical benefit. The available evidence indicates that the benefit of pentoxifylline is marginal, and it is, at best, a second-line alternative to cilostazol.

Ref: Hennion DR, Siano KA: Diagnosis and treatment of peripheral arterial disease. Am Fam Physician 2013;88(5):306-310.

Item 233

ANSWER: C

In older adults, coprescription of clarithromycin or erythromycin with a statin that is metabolized by CYP 3A4 (atorvastatin, simvastatin, lovastatin) increases the risk of statin toxicity. The other antibiotics listed do not interact with statins.

Ref: Patel AM, Shariff S, Bailey DG, et al: Statin toxicity from macrolide antibiotic coprescription: A population-based cohort study. Ann Intern Med 2013;158(12):869-876.

Item 234

ANSWER: D

Patients with persistent supraventricular tachycardias require immediate medical attention. A patient who has no underlying heart disease and a regular, narrow complex tachycardia should be treated with adenosine. If the patient does not respond to this treatment, cardioversion should be considered. Vasopressin would be useful if the patient were unstable with a ventricular tachycardia.

Ref: Link MS: Evaluation and initial treatment of supraventricular tachycardia. N Engl J Med 2012;367(15):1438-1448.

Item 235

ANSWER: D

The diagnosis of diabetic ketoacidosis (DKA) is based on an elevated serum glucose level (>250 mg/dL), an elevated serum ketone level, a pH <7.3, and a serum bicarbonate level <18 mEq/L. The severity of DKA is determined by the arterial pH, bicarbonate level, anion gap, and mental status of the patient. Elevation of BUN and serum creatinine levels reflects intravascular volume loss. The measured serum sodium is reduced as a result of the hyperglycemia, as serum sodium is reduced by 1.6 mEq/L for each 100 mg/dL rise in serum glucose. The degree of hyperglycemia does not necessarily correlate closely with the degree of DKA since a variety of factors determine the level of hyperglycemia, such as oral intake and urinary glucose loss (SOR C).

Ref: Longo DL, Fauci AS, Kasper DL, et al (eds): Harrison's Principles of Internal Medicine, ed 18. McGraw-Hill, 2012, pp 2968-3003. 2) Westerberg DP: Diabetic ketoacidosis: Evaluation and treatment. Am Fam Physician 2013;87(5):337-346.

Item 236

ANSWER: B

Primary hyperaldosteronism is a relatively common cause of resistant hypertension. Because there are effective treatments, it is reasonable to consider testing for hyperaldosteronism in patients with resistant hypertension. This is true even for patients with a normal potassium level. The preferred initial test is a morning renin to aldosterone ratio. A ratio <20 (when plasma aldosterone is reported in ng/dL and plasma renin activity is in ng/mL/hr) effectively rules out primary hyperaldosteronism. A ratio ≥ 20 with a serum aldosterone level >15 ng/dL suggests aldosteronism, but a salt suppression test must be done for confirmation. Although abdominal MRI may detect an adrenal mass, it is not recommended as a test for hyperaldosteronism. Urinary potassium levels do not play a role in the diagnosis of primary hyperaldosteronism.

Ref: Viera AJ: Resistant hypertension. J Am Board Fam Med 2012;25(4):487-495.

Item 237

ANSWER: D

According to the American Society for Colposcopy and Cervical Pathology, a Papanicolaou test with co-testing for HPV is the preferred cervical cancer screening strategy for women age 30–64. This is because despite negative cytology, women with oncogenic HPV are at higher risk for later CIN 3+ than women with negative HPV tests. The risk of CIN 3+ in HPV-positive but cytology-negative women is sufficient to justify an earlier return for retesting. However, most HPV infections are cleared spontaneously, which reduces the risk of CIN 3+, so observing patients to allow time for this to happen is an attractive option.

Guidelines must balance the risks arising from interventions for HPV that may clear spontaneously against the risks of disease. Women with HPV 16 are at particular risk for CIN 3+. HPV 18 merits special consideration because of its association with cervical adenocarcinomas, which are less efficiently detected by cytology than squamous cell cancers. The patient described here should be advised to return for co-testing in 1 year. If her cytology remains negative but her HPV test remains positive, she should be advised to have colposcopy at that time regardless of the serotype of the HPV. If her current test had shown evidence of either strain 16 or 18 immediate colposcopy would be indicated.

Ref: Massad LS, Einstein MH, Huh WK, et al: 2012 updated consensus guidelines for the management of abnormal cervical cancer screening tests and cancer precursors. J Low Genit Tract Dis 2013;17(5 Suppl 1):S1-S27.

Item 238

ANSWER: C

For patients with a history of egg allergy who have experienced only hives, the Advisory Committee on Immunization Practices recommends influenza vaccination with inactivated vaccine rather than live-attenuated vaccine. The vaccine should be administered by a health care professional proficient in potential manifestations of egg allergy, and the patient observed for at least 30 minutes afterward. Persons who have had allergic reactions to egg proteins that include angioedema, respiratory distress, lightheadedness, or recurrent emesis, or who required epinephrine or other emergency medical interventions, are more likely to have a systemic or anaphylactic reaction to the vaccine. A previous severe reaction to influenza vaccine is a contraindication to future vaccination. Prednisone is not appropriate as a preventive measure.

Ref: Cayley WE Jr: Are neuraminidase inhibitors effective for preventing and treating influenza in healthy adults and children? Am Fam Physician 2012;86(7):624-626.

Item 239

ANSWER: B

Late in 2012, the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention recommended hepatitis B vaccine for all previously unvaccinated adults between the ages of 19 and 59 with diabetes mellitus, as soon as possible after the diagnosis of diabetes is made. Vaccination should be considered for patients ≥ age 60, after assessing their risk and the likelihood of an adequate immune response.

Ref: American Diabetes Association: Standards of medical care in diabetes—2013. Diabetes Care 2013;36(Suppl 1):S11-S66.

Item 240

ANSWER: C

Historically, patients with acute pancreatitis were kept NPO to rest the pancreas. Evidence now shows that bowel rest is associated with intestinal mucosal atrophy and increased infectious complications because of bacterial translocation from the gut. Multiple studies have shown that patients who are provided oral feeding early in the course of acute pancreatitis have a shorter hospital stay, decreased infectious complications, decreased morbidity, and decreased mortality. Starting with a low-fat solid diet has been shown to be safe compared with clear liquids, providing more calories and shortening hospital stays.

Total parenteral nutrition should be avoided in patients with mild or severe acute pancreatitis. There have been multiple randomized trials showing that total parenteral nutrition is associated with infectious and other line-related complications.

Ref: Tenner S, Baillie J, DeWitt J, et al: American College of Gastroenterology guideline: Management of acute pancreatitis. Am J Gastroenterol 2013;108(9):1400-1415.