American Board of Family Medicine

2022 IN-TRAINING EXAMINATION

CRITIQUE BOOK

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

Item 1

ANSWER: B

Primary hyperaldosteronism should be suspected as a cause for hypertension if a patient has a spontaneously low potassium level or persistent hypertension despite the use of three or more antihypertensive medications, including a diuretic. This can be evaluated by checking a serum renin activity level and a serum aldosterone concentration and determining the aldosterone/renin ratio. Primary hyperaldosteronism typically presents with a very low serum renin activity level and an elevated serum aldosterone concentration. A 24-hour urine collection for 5-hydroxyindoleacetic acid (5-HIAA) would be used to evaluate for a neuroendocrine tumor, which can present as chronic flushing and diarrhea. Cortisol levels can be checked if Cushing syndrome is suspected. Hypertension can be present in Cushing syndrome, but it is typically associated with other signs such as obesity and an elevated blood glucose level due to insulin resistance. Cystatin C is a marker of renal function and measurement would not be indicated given this patient's normal creatinine level.

Ref: Funder JW, Carey RM, Mantero F, et al: The management of primary aldosteronism: Case detection, diagnosis, and treatment: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2016;101(5):1889-1916. 2) Charles L, Triscott J, Dobbs B: Secondary hypertension: Discovering the underlying cause. *Am Fam Physician* 2017;96(7):453-461.

Item 2

ANSWER: E

Erythema nodosum, a panniculitis that typically affects the subcutaneous fat on the anterior surface of the lower legs, is associated with coccidioidomycosis (valley fever) and can suggest the diagnosis. It is a manifestation of the patient's immune response and often indicates a good prognosis. In addition to coccidioidomycosis, it can also be associated with streptococcal infections as well as tuberculosis. Erythema ab igne is a cutaneous rash caused by prolonged heat exposure (such as a heating pad) presenting as an otherwise asymptomatic, red, reticulated pattern on the skin. Erythema infectiosum is associated with parvovirus B19 infection and is usually seen in young children. It manifests as an erythematous rash of the face (slapped cheek appearance), arms, and legs. Erythema migrans is an expanding, erythematous, annular rash with or without central clearing and is often associated with tick exposure (Lyme disease). Erythema multiforme consists of raised, annular, target-like lesions with central erythema and is usually associated with herpes simplex virus type 1.

Ref: Schwartz RA, Nervi SJ: Erythema nodosum: A sign of systemic disease. *Am Fam Physician* 2007;75(5):695-700. 2) Trayes KP, Savage K, Studdiford JS: Annular lesions: Diagnosis and treatment. *Am Fam Physician* 2018;98(5):283-291. 3) Herrick KR, Trondle ME, Febles TT: Coccidioidomycosis (valley fever) in primary care. *Am Fam Physician* 2020;101(4):221-228.

Item 3

ANSWER: E

Primary prevention of variceal hemorrhage is an important consideration in the management of patients with cirrhosis. Although this patient's varices were diagnosed incidentally, patients with cirrhosis and clinically significant portal hypertension should be screened for varices every 2–3 years with esophagogastroduodenoscopy (EGD). EGD can be deferred in patients with platelet counts $< 150{,}000/mm^3$ and transient elastography with liver stiffness < 20 kPa. Once esophageal varices are identified, the criteria for initiating prophylaxis to prevent variceal hemorrhage is based on the risk of bleeding. Findings associated with a high risk of bleeding include small varices in patients with decompensated cirrhosis, small varices with red wale signs (thinning of the variceal wall), and medium to large varices. Patients with small varices not meeting these criteria have a low risk of hemorrhage and do not require prophylaxis. They should be rescreened with EGD every 1–2 years.

For patients requiring treatment due to high-risk features, options for primary prophylaxis of hemorrhage include nonselective β-blockers such as propranolol or endoscopic variceal ligation. Treatment decisions are based on patient preference, other potential contraindications, and local resources. The need for repeat endoscopy in these cases will depend on the clinical circumstances. If nonselective β-blockers are used, they should be continued indefinitely. Octreotide is only given intravenously for acute hemorrhage. There is no evidence that omeprazole slows the progression of esophageal varices.

Ref: Garcia-Tsao G, Abraldes JG, Berzigotti A, Bosch J: Portal hypertensive bleeding in cirrhosis: Risk stratification, diagnosis, and management: 2016 Practice guidance by the American Association for the study of liver diseases. *Hepatology* 2017;65(1):310-335. 2) Smith A, Baumgartner K, Bositis C: Cirrhosis: Diagnosis and management. *Am Fam Physician* 2019;100(12):759-770.

Item 4

ANSWER: A

This patient is experiencing behavioral and psychological symptoms of dementia (BPSD) as her cognitive and functional status decline. Evening agitation is a common form of BPSD, often referred to as *sundowning*. As with most BPSD, a nonpharmacologic approach to improve agitation has much stronger evidence for efficacy compared to a pharmacologic approach. A recent network meta-analysis showed that sensory stimulation, including massage, touch, and music therapy, significantly outperforms pharmacologic intervention (level of evidence 1a). Cognitive training, especially for BPSD in the context of advanced dementia, does not have strong evidence to support its use. Pharmacologic intervention should be initiated with caution given the potential for side effects, and should be a last resort in situations where there is a risk of self-harm or harm to others.

Ref: Bahar-Fuchs A, Clare L, Woods B: Cognitive training and cognitive rehabilitation for mild to moderate Alzheimer's disease and vascular dementia. *Cochrane Database Syst Rev* 2013;(6):CD003260. 2) Reese TR, Thiel DJ, Cocker KE: Behavioral disorders in dementia: Appropriate nondrug interventions and antipsychotic use. *Am Fam Physician* 2016;94(4):276-282. 3) Watt JA, Goodarzi Z, Veroniki AA, et al: Comparative efficacy of interventions for aggressive and agitated behaviors in dementia: A systematic review and network meta-analysis. *Ann Intern Med* 2019;171(9):633-642.

Item 5

ANSWER: A

One of the most potentially devastating late complications of joint replacement surgery is infection of the prosthetic joint. Because dental procedures are known to induce transient bacteremia, the use of prophylactic antibiotics prior to dental procedures for patients with prosthetic joints was considered orthopedic dogma for many years. However, current evidence to support this practice is limited and antibiotic use is known to increase cost, bacterial resistance, and the risk of adverse drug reactions. In most cases the risks of antibiotic prophylaxis outweigh the likelihood of benefit. Recent guidelines from the American Dental Association and the American Academy of Orthopaedic Surgeons recommend against the routine use of prophylactic antibiotics for dental procedures in patients with a history of joint replacement, except for situations in which infectious risk is increased, such as immunocompromise or a history of a previous joint infection.

Ref: Herrick KR, Terrio JM, Herrick C: Medical clearance for common dental procedures. *Am Fam Physician* 2021;104(5):476-483.

Item 6

ANSWER: A

Amiodarone-induced thyrotoxicosis (AIT) is a less common cause of hyperthyroidism and can be particularly difficult to accurately diagnose and treat. AIT type 1 is a form of iodine-induced thyrotoxicosis caused by the high iodine content in amiodarone. AIT type 2 is a form of amiodarone-induced thyroiditis. Digoxin, flecainide, metoprolol, and valsartan do not cause hyperthyroidism.

Ref: McDermott MT: Hyperthyroidism. *Ann Intern Med* 2020;172(7):ITC49-ITC64.

Item 7

ANSWER: D

This patient needs a tetanus toxoid–containing vaccine for the management of her wound. Since pregnant people should receive a dose of Tdap between 27 and 36 weeks gestation to protect against pertussis, Tdap is the best choice for this patient. Tetanus immune globulin would be appropriate if this patient had not previously completed the primary series or were showing signs of clinical tetanus. Td would be an appropriate option for tetanus prophylaxis in nonpregnant patients who have previously received Tdap. Because this patient requires some form of tetanus prophylaxis at this time, waiting until 38 weeks to administer Tdap is not appropriate.

Ref: Committee Opinion No. 718 summary: Update on immunization and pregnancy: Tetanus, diphtheria, and pertussis vaccination. *Obstet Gynecol* 2017;130(3):668-669. 2) Epidemiology and prevention of vaccine-preventable diseases: Chapter 21: Tetanus. Centers for Disease Control and Prevention, 2021.

Item 8

ANSWER: A

In 2020, the CDC updated its treatment guidelines for gonococcal infections. The recommended first-line therapy for patients weighing >150 kg (330 lb) with gonococcal urethritis is one dose of ceftriaxone, 1 g intramuscularly. One dose of ceftriaxone, 500 mg intramuscularly, is recommended for those weighing <150 kg. Patients presenting with an unknown cause of urethritis, such as before urine or urethral nucleic acid amplification test results are known, should be prescribed a combination of one dose of ceftriaxone, 500 mg intramuscularly (1 g if >150 kg), and doxycycline, 100 mg orally for 7 days. Azithromycin, 1 g orally as a single dose, may be used as an alternative to doxycycline for treatment of chlamydial infection, but it is no longer the preferred agent in nonpregnant adults and adolescents. Intramuscular gentamicin is inferior to intramuscular ceftriaxone for the treatment of gonorrhea, even when used in combination with oral azithromycin (SOR B).

Ref: St Cyr S, Barbee L, Workowski KA, et al: Update to CDC's treatment guidelines for gonococcal infection, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69(50):1911-1916. 2) Sell J, Nasir M, Courchesne C: Urethritis: Rapid evidence review. *Am Fam Physician* 2021;103(9):553-558.

Item 9

ANSWER: B

Hormone therapy is not required for all transgender patients, but those who receive treatment generally report improved quality of life, higher self-esteem, and decreased anxiety. Feminizing and masculinizing hormone therapies, including the use of estrogen and/or androgen therapies such as testosterone, are partially irreversible. Thus, it is important to make a reasonable, educated decision and use informed consent prior to treatment. Patients who receive masculinizing therapy are at increased risk for erythrocytosis and those who receive feminizing hormone therapy often experience reduced muscle mass and fat redistribution.

Ref: Klein DA, Paradise SL, Goodwin ET: Caring for transgender and gender-diverse persons: What clinicians should know. *Am Fam Physician* 2018;98(11):645-653.

Item 10

ANSWER: B

Nickel allergy is a common form of contact dermatitis. In this case, the rash is being caused by earrings rubbing the patient's neck. The inflammation of the earlobe is another clue to the diagnosis. While atopic dermatitis, psoriasis, and seborrheic dermatitis could affect the neck along the hairline, this patient's rash is much less consistent with these conditions.

Ref: Usatine RP, Riojas M: Diagnosis and management of contact dermatitis. *Am Fam Physician* 2010;82(3):249-255. 2) Habif TP, Dinulos JGH, Chapman MS, Zug KA: *Skin Disease: Diagnosis and Treatment*, ed 4. Elsevier, 2018, pp 45-50.

Item 11

ANSWER: E

Acute kidney injury (AKI) is defined by a rapid decline in glomerular filtration rate (GFR) and an increase in metabolic waste products. It is associated with an increased risk of cardiovascular events, progression to chronic kidney disease, and mortality. AKI is categorized as prerenal, intrinsic renal, and postrenal. Diagnosing the underlying cause is vital to successful management. Management includes determining volume status, treating acute volume changes with diuretics and fluid resuscitation, adjusting medications according to renal function, and discontinuing nephrotoxic medications. Prerenal AKI is caused by a depletion of intravascular volume, which leads to decreased renal perfusion and GFR. In the intensive-care setting, sepsis is the most common cause of prerenal AKI. Angiotensin receptor blockers, ACE inhibitors, and NSAIDs lower renal perfusion, causing the kidneys to activate compensatory mechanisms to maintain the GFR. For those with chronic kidney disease, this increases the risk for AKI. Membranoproliferative glomerulonephritis and polyarteritis nodosa are intrinsic renal causes for AKI. Postrenal causes include lower and upper urinary tract disorders such as infections, carcinoma, and nephrolithiasis. Systemic postrenal causes include diabetes mellitus, stroke, and multiple sclerosis.

Ref: Mercado MG, Smith DK, Guard EL: Acute kidney injury: Diagnosis and management. *Am Fam Physician* 2019;100(11):687-694.

Item 12

ANSWER: A

This patient has signs and symptoms consistent with polycystic ovary syndrome (PCOS). The Rotterdam 2003 criteria are the most widely used diagnostic criteria for PCOS, endorsed by multiple national and international professional societies. These criteria require the presence of two out of the following three features: oligomenorrhea, hyperandrogenism, and the presence of polycystic ovaries on ultrasonography. When the first two of these criteria are clearly met, ultrasonography to establish the presence of polycystic ovaries is not required. Therefore, a diagnosis is already warranted for this patient and additional evaluation is not needed. When patients require imaging, pelvic ultrasonography is the preferred modality rather than CT. While this patient has evidence of insulin resistance, as is common for patients with PCOS, a C-peptide test is not indicated. Dexamethasone suppression testing is not indicated because this patient does not have any other clinical signs and symptoms that would be consistent with Cushing syndrome.

Ref: Williams T, Mortada R, Porter S: Diagnosis and treatment of polycystic ovary syndrome. *Am Fam Physician* 2016;94(2):106-113.

Item 13

ANSWER: B

The decision regarding antithrombotic therapy in atrial fibrillation is a careful risk assessment balancing the reduction in the risk of ischemic stroke against the risk of major bleeding associated with anticoagulants and antiplatelets. The CHA_2DS_2-VASc tool is widely used to help weigh these benefits versus potential harms. Due to the overall benefit of stroke reduction, anticoagulation with either a direct oral anticoagulant (DOAC) such as apixaban or a vitamin K antagonist such as warfarin is recommended in patients with atrial fibrillation who have a CHA_2DS_2-VASc score ≥2. Aspirin monotherapy is considered an ineffective antithrombotic strategy and inferior to a DOAC or warfarin for preventing thromboembolic events in patients with atrial fibrillation. Adding aspirin therapy to warfarin does not confer extra benefit and increases the risk of major bleeding.

Ref: Hauk L: Newly detected atrial fibrillation: AAFP updates guideline on pharmacologic management. *Am Fam Physician* 2017;96(5):332-333.

Item 14

ANSWER: A

Sarcoidosis is an inflammatory disease that can affect many organ systems, but 90% of patients have pulmonary involvement. While many patients diagnosed with sarcoidosis are asymptomatic, pulmonary symptoms including dry cough, the gradual onset of dyspnea, and fatigue are nonspecific, and the condition is often not suspected until chest radiography is performed. The most common finding is bilateral hilar adenopathy alone (stage 1). Other findings, which usually develop over time, include infiltrates and, in some patients, ultimately fibrosis. The classic pathologic findings from biopsies are noncaseating granulomas. Caseating granulomas are indicative of tuberculosis. Pleural involvement is not typical in sarcoidosis. Peribronchiolar or peritracheal thickening and interstitial infiltrates may be seen on CT scans, but bilateral hilar adenopathy is the most characteristic finding in earlier pulmonary sarcoidosis and is readily seen on plain chest radiographs.

Ref: Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, pp 2829-2837.

Item 15

ANSWER: B

According to a 2016 meta-analysis, patients with diabetes mellitus were five times more likely than the control group to have adhesive capsulitis. The same study also found the prevalence of diabetes in patients with adhesive capsulitis to be about 30%. Because of this high prevalence, screening for diabetes with a fasting glucose level or hemoglobin A_{1c} is recommended in patients with adhesive capsulitis who have not previously been diagnosed with diabetes. There is no evidence to support screening for Addison's disease or rheumatoid arthritis in patients with adhesive capsulitis (SOR C). Hyperparathyroidism and hypertension are not associated with adhesive capsulitis.

Ref: Ramirez J: Adhesive capsulitis: Diagnosis and management. *Am Fam Physician* 2019;99(5):297-300.

Item 16

ANSWER: D

Unconjugated hyperbilirubinemia can be defined as an elevated indirect bilirubin level. While unconjugated hyperbilirubinemia is most commonly seen in hemolysis, another common cause is Gilbert syndrome, which stems from a genetic defect that affects how the liver processes bilirubin. Alcoholic liver disease, biliary tract disease, fatty liver disease, and Wilson disease do not lead to unconjugated hyperbilirubinemia.

Ref: Tran AN, Lim JK: Care of the patient with abnormal liver test results. *Ann Intern Med* 2021;174(9):ITC129-ITC144.

Item 17

ANSWER: A

This patient's clinical picture is most consistent with chronic autoimmune thyroiditis, traditionally known as Hashimoto thyroiditis. This diagnosis is suggested by her neck fullness and symptoms of hypothyroidism. Additionally, a nontender goiter that feels like pebbles on examination is classically reported with chronic autoimmune thyroiditis.

Graves disease typically presents with symptoms of hyperthyroidism and, in many patients, orbitopathy (eye bulging). A patient with lymphadenitis typically shows symptoms of a causative infection. Lymphadenitis tends to rapidly enlarge the lymph nodes, which are also typically painful and tender. Lymphoma more commonly presents with fevers, night sweats, unintentional weight loss, itchy skin, and dyspnea.

This patient lacks a discrete thyroid nodule, which makes thyroid cancer less likely. Thyroid nodules are more frequently painful, while the neck fullness in chronic autoimmune thyroiditis is usually painless and nontender.

Ref: Cameron JL, Cameron AM: *Current Surgical Therapy*, ed 13. Elsevier, 2020, pp 764-767. 2) Martinez Quintero B, Yazbeck C, Sweeney LB: Thyroiditis: Evaluation and treatment. *Am Fam Physician* 2021;104(6):609-617.

Item 18

ANSWER: A

Most bacteriologic treatment failures for group A *Streptococcus* (GAS) represent a GAS carrier state. This patient had clinical improvement followed by a second illness with typical features of a viral infection. Oral azithromycin, oral ciprofloxacin, intramuscular benzathine penicillin, and intramuscular ceftriaxone are not appropriate for the treatment of viral infections in a patient who is a pharyngeal GAS carrier.

Ref: Shulman ST, Bisno AL, Clegg HW, et al: Clinical practical 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):e86-e102.

Item 19

ANSWER: C

The American Academy of Pediatrics recommends annual blood pressure screening at well child checks beginning at 3 years of age. This recommendation does not differ for children who have a strong family history of hypertension.

Ref: Flynn JT, Kaelber DC, Baker-Smith CM, et al: Clinical practice guideline for screening and management of high blood pressure in children and adolescents. *Pediatrics* 2017;140(3):e20171904.

Item 20

ANSWER: A

Because of their vasoconstricting properties, triptan medications are contraindicated in patients with established coronary artery disease, cerebrovascular disease, or peripheral vascular disease; patients with uncontrolled or multiple cardiovascular risk factors; and patients with certain high-risk migraine syndromes, including basilar and hemiplegic migraines. Triptan use for the treatment of migraine headaches would not be contraindicated with a history of depression with psychotic features, poorly controlled diabetes mellitus, hypertension requiring two medications, or stage 4 chronic kidney disease.

Ref: Mayans L, Walling A: Acute migraine headache: Treatment strategies. *Am Fam Physician* 2018;97(4):243-251. 2) Robbins MS: Diagnosis and management of headache: A review. *JAMA* 2021;325(18):1874-1885.

Item 21

ANSWER: C

In addition to bisphosphonates, calcium, and vitamin D, zinc supplementation is recommended to improve bone density in patients with thalassemia and osteoporosis (SOR C). Though hydroxyurea is an indicated therapy to minimize the frequency of blood transfusions needed in transfusion-dependent thalassemia, it does not improve bone density (SOR C). Vitamin C supplementation does not improve bone health in patients with thalassemia and osteoporosis. Deferoxamine infusions are indicated when ferritin levels are >1000 ng/mL in patients with transfusion-dependent thalassemia to reduce iron overload (SOR C). Luspatercept reduced transfusion burden by 33% in a phase 3, randomized study but is not indicated to improve bone density.

Ref: Baird DC, Batten SH, Sparks SK: A- and β-thalassemia: Rapid evidence review. *Am Fam Physician* 2022;105(3):272-280.

Item 22

ANSWER: C

This patient presents with symptoms consistent with seasonal affective disorder (SAD). According to the *DSM-5*, this condition is not defined as a separate diagnosis, but instead a variant of major depressive or bipolar disorder. SAD is a mood disorder with depressive symptoms occurring at a specific time of year with full remission in between episodes, which usually occur during fall and winter months. A less common form can present during summer or spring. Criteria specify that full remission must occur when the specific season ends and there must be at least two consecutive years of mood episodes. The pathology is unclear but risk factors include family history, living at a more northern latitude, female sex, and age 18–30. First-line therapy for the treatment of SAD includes light therapy (SOR A), with a response rate of about 50%; cognitive therapy (SOR A); and antidepressants such as SSRIs (SOR B). Vitamin D supplementation is not a first-line treatment for SAD, and trazodone would not be used for someone who is already having issues with excessive sleeping. There is no convincing evidence that a high-protein diet is an effective treatment for SAD. For this patient with regular recurrences, long-term preventive intervention each year with light therapy starting in the early fall is indicated.

Ref: Mischoulon D, Pedrelli P, Wurtman J, et al: Report of two double-blind randomized placebo-controlled pilot studies of a carbohydrate-rich nutrient mixture for treatment of seasonal affective disorder (SAD). *CNS Neurosci Ther* 2010;16(1):13-24. 2) Galima SV, Vogel SR, Kowalski AW: Seasonal affective disorder: Common questions and answers. *Am Fam Physician* 2020;102(11):668-672. 3) Yang Y, Zhang S, Zhang X, et al: The role of diet, eating behavior, and nutrition intervention in seasonal affective disorder: A systematic review. *Front Psychol* 2020;11:1451.

Item 23

ANSWER: E

Hyperkalemia is a known side effect of ACE inhibitors and angiotensin receptor blockers such as olmesartan. The risk of hyperkalemia is increased with chronic kidney disease, diabetes mellitus, moderately severe to severe heart failure, NSAID use, and older adults. Chlorthalidone and hydrochlorothiazide can cause hypokalemia, while amlodipine and metoprolol have no significant effect on potassium levels.

Ref: Viera AJ, Wouk N: Potassium disorders: Hypokalemia and hyperkalemia. *Am Fam Physician* 2015;92(6):487-495. 2) Benicar (olmesartan) prescribing information. US Food and Drug Administration, updated 2019.

Item 24

ANSWER: B

The patient has hidradenitis suppurativa, a chronic folliculitis affecting intertriginous areas in the axillae and the groin that may also occur around the anus and nipples. Treatment depends on severity and ranges from topical to systemic antibiotics. Hidradenitis suppurativa is associated with obesity, diabetes mellitus, Crohn's disease, arthritis and spondyloarthropathy, metabolic syndrome, polycystic ovary syndrome, pyoderma gangrenosum, and trisomy 21. There are three stages: stage I is single or multiple abscesses without sinus tracts or scarring, stage II is abscess recurrence with sinus tracts and scarring and widely separated lesions, and stage III is diffuse abscesses with interconnecting sinus tracts. Amyotrophic lateral sclerosis has no typical skin manifestation. Dermatitis herpetiformis is associated with celiac disease and has clusters of pruritic lesions. Systemic lupus erythematosus has cutaneous manifestations of a malar rash and may involve subcutaneous lesions without scarring. Hidradenitis suppurativa is not associated with trauma.

Ref: Porter RS: *The Merck Manual of Diagnosis and Therapy*, ed 20. Wiley, 2018, pp 264, 991-993, 1007, 1986. 2) Wipperman J, Bragg DA, Litzner B: Hidradenitis suppurativa: Rapid evidence review. *Am Fam Physician* 2019;100(9):562-569.

Item 25

ANSWER: D

Biologic therapy for asthma targets type 2 inflammation pathways. According to the 2019 Global Initiative for Asthma (GINA) guidelines, diagnosis and management of severe asthma includes determination of the asthma phenotype to assess for type 2 inflammation. Type 2 asthma includes allergic and eosinophilic asthma. Non–type 2 asthma is driven by neutrophils and is associated with smoking and obesity. Type 2 inflammation is diagnosed by elevated eosinophils in the blood or sputum, elevated fractional exhaled nitric oxide, or a need for oral corticosteroid maintenance therapy. Biologic therapy may be considered in patients with severe type 2 inflammatory asthma who continue to have significant symptoms despite adherence to optimal therapy, including high-dose inhaled corticosteroids and a long-acting β-agonist.

Ref: Narasimhan K: Difficult to treat and severe asthma: Management strategies. *Am Fam Physician* 2021;103(5):286-290.

Item 26

ANSWER: D

Intrahepatic cholestasis of pregnancy (ICP) presents with pruritus of the palms and soles with or without jaundice along with an elevation in serum bile acid concentrations. ICP, which is most common in the late second and/or third trimester, can cause significant risk to the fetus, including fetal death, and is therefore treated aggressively with ursodeoxycholic acid and often early delivery. Corticosteroid creams, tacrolimus, and cetirizine are not appropriate treatments for ICP. Kidney function tests such as a BUN/creatinine ratio would not be initially appropriate in this case.

Ref: Williamson C, Geenes V: Intrahepatic cholestasis of pregnancy. *Obstet Gynecol* 2014;124(1):120-133. 2) Gregory DS, Wu V, Tuladhar P: The pregnant patient: Managing common acute medical problems. *Am Fam Physician* 2018;98(9):595-602. 3) Manzotti C, Casazza G, Stimac T, et al: Total serum bile acids or serum bile acid profile, or both, for the diagnosis of intrahepatic cholestasis of pregnancy. *Cochrane Database Syst Rev* 2019;7:CD012546.

Item 27

ANSWER: E

In geriatric patients with frailty syndrome, the intervention with the best evidence for effectiveness is progressive resistance training as a part of a physical activity program. The routine use of protein supplements, vitamin D supplements, or hormonal treatments, including anabolic steroids, is not recommended. Aerobic conditioning training may be helpful but the strongest evidence for efficacy is for activities that include progressive resistance training.

Ref: Allison R 2nd, Assadzandi S, Adelman M: Frailty: Evaluation and management. *Am Fam Physician* 2021;103(4):219-226.

Item 28

ANSWER: E

This patient has a low serum TSH level in the presence of normal free T_4 and total or free T_3 levels, which is consistent with subclinical hyperthyroidism. The etiology of overt and subclinical hyperthyroidism should be determined by clinical symptoms, biochemical markers, and, if indicated, diagnostic studies such as a radioactive iodine uptake (RAIU) scan. A scan that shows multiple areas of increased and suppressed uptake is consistent with toxic multinodular goiter. There is no RAIU with exogenous ingestion of thyroid hormone, painless thyroiditis, and recent excess iodine intake. Graves disease causes diffuse RAIU.

It is important to determine the etiology of subclinical hyperthyroidism in order to treat it appropriately. In patients who have TSH levels that are persistently <0.1 μU/mL, the American Thyroid Association has a strong recommendation with moderate-quality evidence for treating patients 65 years of age and older; persons with cardiac risk factors, heart disease, or osteoporosis; postmenopausal women not on estrogens or bisphosphonates; and those with hyperthyroid symptoms.

Ref: Ross DS, Burch HB, Cooper DS, et al: 2016 American Thyroid Association guidelines for diagnosis and management of hyperthyroidism and other causes of thyrotoxicosis. *Thyroid* 2016;26(10):1343-1421. 2) Donangelo I, Suh SY: Subclinical hyperthyroidism: When to consider treatment. *Am Fam Physician* 2017;95(11):710-716.

Item 29

ANSWER: B

Tumor lysis syndrome is considered the most common oncologic emergency. It is caused by the rapid release of intracellular material from lysis of the malignant cells. The breakdown of nucleic acids releases large amounts of uric acid and leads to acute kidney failure, which limits clearance of potassium, phosphorus, and uric acid. This leads to hyperuricemia, secondary hypocalcemia, hyperkalemia, and hyperphosphatemia. It can result in acute renal failure, arrhythmia, seizure, and sudden death. While tumor lysis syndrome has been reported with many cancer types, it is more common with acute leukemia and high-grade lymphomas. Patients with this condition generally present within 7 days of cancer treatment, including chemotherapy, radiation, or biologic therapies. It can also occur spontaneously. An LDH elevation related to a high cell turnover rate prior to cancer treatment may indicate an increased risk of tumor lysis syndrome. Hypercalcemia, hypokalemia, hypophosphatemia, and low LDH would not be expected laboratory findings in patients with tumor lysis syndrome.

Ref: Will A, Tholouli E: The clinical management of tumour lysis syndrome in haematological malignancies. *Br J Haematol* 2011;154(1):3-13. 2) Wilson FP, Berns JS: Tumor lysis syndrome: New challenges and recent advances. *Adv Chronic Kidney Dis* 2014;21(1):18-26. 3) Higdon ML, Atkinson CJ, Lawrence KV: Oncologic emergencies: Recognition and initial management. *Am Fam Physician* 2018;97(11):741-748.

Item 30

ANSWER: A

In the setting of acute symptoms, cardiac stress testing is indicated when there is an intermediate probability of acute coronary syndrome. Cardiac stress testing is also indicated in a preoperative assessment when surgery is at least a moderate risk and the patient cannot reach 4 METs of exertion (climbing a single flight of stairs) without cardiac symptoms. Cardiac stress testing is contraindicated after a recent stroke or TIA and in patients with severe symptomatic aortic stenosis. It is not indicated in asymptomatic patients with no history of revascularization.

Ref: Garner KK, Pomeroy W, Arnold JJ: Exercise stress testing: Indications and common questions. *Am Fam Physician* 2017;96(5):293-299.

Item 31

ANSWER: B

Ultrasonography is recommended as the initial imaging modality to evaluate acute abdominal pain in children. It avoids radiation exposure and is useful for detecting many causes of abdominal pain, including appendicitis. After ultrasonography, CT or MRI can be used if necessary to diagnose appendicitis. Abdominal radiography is helpful in patients with constipation, possible bowel obstruction, or a history of previous abdominal surgery.

The American Academy of Pediatrics Choosing Wisely recommendation on the evaluation of abdominal pain states that CT is not always necessary. Similarly, the American College of Surgeons Choosing Wisely recommendation on the evaluation of suspected appendicitis in children says that CT should be avoided until after ultrasonography has been considered as an option.

Ref: American Academy of Pediatrics: Computed tomography (CT) scans are not necessary in the routine evaluation of abdominal pain. ABIM Foundation Choosing Wisely campaign, 2013. 2) American College of Surgeons: Don't do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option. ABIM Foundation Choosing Wisely campaign, 2013. 3) Reust CE, Williams A: Acute abdominal pain in children. *Am Fam Physician* 2016;93(10):830-836. 4) ACR appropriateness criteria. American College of Radiology, 2022.

Item 32

ANSWER: D

This patient has signs and symptoms of seasonal allergic rhinitis. He has a history of seasonal symptoms with a predominance of itchy nose, clear rhinorrhea, and watery eyes. The American Academy of Allergy, Asthma & Immunology (AAAA&I) Rhinitis 2020 practice parameter update recommends an intranasal corticosteroid such as fluticasone as initial treatment for seasonal allergic rhinitis (SOR strong, certainty of evidence [COE] high). Due to the lack of available evidence, the AAAA&I cannot make a recommendation for or against the use of herbal treatments such as butterbur or Yu ping feng san. An oral antibiotic such as amoxicillin would be used for suspected bacterial infectious rhinitis, which this patient does not have. The AAAA&I suggests not using the leukotriene receptor antagonist montelukast as initial treatment due to its decreased efficacy when compared to other treatments (SOR conditional, COE very low). Furthermore, the FDA has advised that, due to the risk of serious neuropsychiatric events, montelukast should only be used for treatment of allergic rhinitis when other options are not tolerated or effective. The AAAA&I also advises against the use of depot parenteral corticosteroids such as intramuscular methylprednisolone due to the risks of systemic and local side effects (SOR conditional, COE low).

Ref: Dykewicz MS, Wallace DV, Amrol DJ, et al: Rhinitis 2020: A practice parameter update. *J Allergy Clin Immunol* 2020;146(4):721-767.

Item 33

ANSWER: A

Most statins are metabolized in the liver by cytochrome P450 3A4 (CYP3A4) enzymes. In patients on statin therapy, concurrent use of other medications that are also metabolized by this system, including amiodarone, calcium channel blockers such as amlodipine, certain anti-HIV medications, and certain antifungal medications, can increase the risk of complications such as statin-induced myopathy. In this patient, only simvastatin and amlodipine are metabolized by CYP3A4. Losartan is metabolized by cytochrome P450 enzymes other than 3A4 (2C9), and this patient's other medications are metabolized by different mechanisms (empagliflozin) or not significantly metabolized (hydrochlorothiazide and metformin).

Ref: Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, p 3551.

Item 34

ANSWER: E

Although it is considered an appetite stimulant, megestrol is not recommended in older adults due to potential harmful side effects and a lack of evidence supporting improved outcomes for the treatment of cachexia in the geriatric population, according to the American Geriatrics Society's Choosing Wisely recommendation. Acetaminophen is not considered a contributor to weight loss. Though loop diuretics, spironolactone, ACE inhibitors, calcium channel blockers, and propranolol may contribute to weight loss due to their adverse effects, hydrochlorothiazide and angiotensin receptor blockers such as losartan are less likely to contribute to weight loss and the patient's hypertension is currently controlled on this regimen. The patient's hypothyroidism is currently stable, so changes to the levothyroxine dosage are unnecessary.

Ref: American Geriatrics Society: Avoid using prescription appetite stimulants or high-calorie supplements for treating of anorexia or cachexia in older adults; instead, optimize social supports, discontinue medications that may interfere with eating, provide appealing food and feeding assistance, and clarify patient goals and expectations. ABIM Foundation Choosing Wisely campaign, revised 2015. 2) Gaddey HL, Holder KK: Unintentional weight loss in older adults. *Am Fam Physician* 2021;104(1):34-40.

Item 35

ANSWER: B

The U.S. Preventive Services Task Force (USPSTF) recommends screening for depression in adolescents and adults starting at age 12. The USPSTF states that the current evidence is insufficient to assess the balance of benefits and harms of screening for iron deficiency anemia in children 6–24 months of age (I recommendation) and does not offer recommendations regarding other age groups. There are no USPSTF recommendations regarding universal screening for diabetes mellitus in children or adolescents. The American Academy of Pediatrics now recommends screening for dyslipidemia in children once between 9 and 11 years of age, but the USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for lipid disorders in children and adolescents ≤20 years of age (I recommendation). HIV screening is recommended in adolescents and adults 15–65 years of age (A recommendation).

Ref: Recommendation topics. US Preventive Services Task Force website, updated 2022.

Item 36

ANSWER: D

Dermatitis herpetiformis is a very pruritic, papulovesicular reaction that is secondary to cutaneous IgA and immune complex deposition related to gluten sensitivity, as in celiac disease. The majority of patients do not have the gastrointestinal disturbances of celiac disease but do have the changes of gluten enteropathy on small bowel biopsies. The diagnosis is supported by elevated IgA tissue transglutaminase (tTG) antibodies, which is the serology of choice for diagnosing celiac disease. The rash frequently responds well to a gluten-free diet and is classically treated with dapsone. The disease is not related to thyroid disease, herpesviruses, or pernicious anemia.

Ref: Jakes AD, Bradley S, Donlevy L: Dermatitis herpetiformis. *BMJ* 2014;348:g2557. 2) Peters JD, Ballin JS: Dermatitis herpetiformis. *Consultant* 2017;57(5):312-313. 3) Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, pp 400-407.

Item 37

ANSWER: C

Based on a reduction in all-cause mortality, JNC 8 advises more intensive blood pressure control in patients with chronic kidney disease (CKD) and proteinuria. This is most often achieved with combination therapy, with either an ACE inhibitor or an angiotensin receptor blocker (ARB), plus either a thiazide diuretic or a calcium channel blocker. ACE inhibitors and ARBs both slow the progression of CKD to end-stage renal disease and reduce morbidity and mortality in patients with CKD (SOR A). However, combining an ACE inhibitor and an ARB actually increases the risk of end-stage renal disease, so these drugs should not be used simultaneously.

The other combinations listed may be effective in improving blood pressure control, but in patients with CKD and proteinuria the combination of an ACE inhibitor or an ARB with a diuretic or calcium channel blocker is most effective for lowering morbidity and mortality.

Ref: Smith DK, Lennon RP, Carlsgaard PB: Managing hypertension using combination therapy. *Am Fam Physician* 2020;101(6):341-349.

Item 38

ANSWER: E

Tinnitus is the sensation of hearing an abnormal sound, such as a ringing, buzzing, or clicking, that is perceived in the ear or head in the absence of an internal or external source. Cognitive behavioral therapy is the only treatment that has been shown to improve quality of life in patients with tinnitus. Treatments that should be avoided include benzodiazepines, transcutaneous electrical nerve stimulation (TENS), and acupuncture. An SSRI could be considered for the management of tinnitus-associated anxiety, but is not considered the most effective therapy for tinnitus.

Ref: Dalrymple SN, Lewis SH, Philman S: Tinnitus: Diagnosis and management. *Am Fam Physician* 2021;103(11):663-671.

Item 39

ANSWER: B

β-Blockers are first-line therapy for antihypertensive therapy and antianginal therapy, whereas calcium channel blockers are second-line agents in patients who are unable to tolerate β-blockers. Calcium channel blockers may also be added as additional therapy when hypertension and angina symptoms are not controlled with β-blockers alone. Patients who have been treated with a drug-eluting stent require dual antiplatelet therapy for 6–12 months. All patients with coronary artery disease should be on high-dose statin therapy.

Ref: Braun MM, Stevens WA, Barstow CH: Stable coronary artery disease: Treatment. *Am Fam Physician* 2018;97(6):376-384.

Item 40

ANSWER: C

Crisis planning is recommended for patients presenting with suicidal ideation (SOR B). By identifying social support, local resources, and counseling services, suicidal ideation and days spent in the hospital can be reduced. Direct inquiry about suicide is recommended to better evaluate and treat suicidal patients with more favorable outcomes (SOR B). Though calling 911 may be appropriate for transportation for inpatient therapy if involuntary treatment is recommended, further assessment is needed in this case. Suicide prevention contracts do not effectively prevent suicide (SOR B). Psychogenic medications should not be withheld when treating a patient with suicidal ideation. Evidence has shown that the combination of pharmacotherapy and psychotherapy is most effective (SOR C).

Ref: Norris DR, Clark MS: The suicidal patient: Evaluation and management. *Am Fam Physician* 2021;103(7):417-421.

Item 41

ANSWER: C

Young children often have difficulty coordinating inhaler use, which can reduce the effectiveness of asthma medications. The use of spacer devices eliminates the need for coordination and increases medication delivery to the lungs. Oral albuterol is no longer recommended. Montelukast, nebulized albuterol, and inhaled salmeterol are not indicated as first-line treatment for asthma exacerbations.

Ref: Okpapi A, Friend AJ, Turner SW: Acute asthma and other recurrent wheezing disorders in children. *Am Fam Physician* 2013;88(2):130-131. 2) Patel SJ, Teach SJ: Asthma. *Pediatr Rev* 2019;40(11):549-567.

Item 42

ANSWER: D

The most appropriate treatment for this patient's acute pain following a T12 vertebral compression fracture is round-the-clock class II narcotics. Subcutaneous calcitonin can also be useful for relieving pain from vertebral fractures. NSAIDs and acetaminophen are usually insufficient during the acute phase of a vertebral compression fracture, and this patient has already tried these. Methadone or transdermal fentanyl can be used, but plasma levels of methadone may take 5–7 days to stabilize and fentanyl takes 24–48 hours to take effect.

Ref: Eiff MP, Hatch R: *Fracture Management for Primary Care*, ed 3 updated. Elsevier Saunders, 2018, pp 201-203.

Item 43

ANSWER: D

Multiple classes of diabetes medications are used to address the pathways that lead to hyperglycemia, and it is important to select medication classes that reduce the risk of hypoglycemia while improving long-term outcomes. Hypoglycemia is associated with cardiovascular disease and all-cause mortality. Sulfonylureas, such as glipizide, glyburide, and glimepiride, commonly cause hypoglycemia as an adverse effect and require glucose monitoring when used. Biguanides most commonly cause diarrhea, vomiting, and other gastrointestinal symptoms. In high-risk patients such as those with heart failure, sepsis, or impaired kidney function, biguanides can also result in lactic acidosis. The only biguanide currently available is metformin. The most common adverse effects of DPP-4 inhibitors, which include saxagliptin, sitagliptin, linagliptin, alogliptin, are headache, nasopharyngitis, infections of the urinary tract or upper respiratory tract, and elevated liver enzymes. SGLT2 inhibitors, such as canagliflozin, dapagliflozin, and empagliflozin, can cause adverse effects such as urinary tract infections, candidiasis, dehydration, and hypovolemia. Only two thiazolidinediones, pioglitazone and rosiglitazone, are available in the United States. Their adverse effects include weight gain, salt retention, edema, and, for some patients, cardiovascular complications. Pioglitazone in particular is contraindicated in patients with heart failure, hemodynamic instability, and hepatic dysfunction. Thiazolidinediones may also increase the risk of bone fractures with long-term use.

Ref: Miller E, Aguilar RB, Herman ME, Schwartz SS: Type 2 diabetes: Evolving concepts and treatment. *Cleve Clin J Med* 2019;86(7):494-504.

Item 44

ANSWER: B

Difficult patient encounters may arise from a wide variety of patient, situational, and even physician factors. The triggering of an emotional response from the staff or the physician is the common factor that defines a difficult encounter. Empathetic listening skills and a nonjudgmental attitude are helpful to facilitate effective communication. Acknowledging anger and ascertaining the patient's concerns can help to validate the patient's feelings and defuse the situation. Physicians should be aware of their own emotional response in order to navigate the situation successfully. While boundaries can be helpful, arbitrarily limiting the visit to a single problem is unlikely to meet the patient's needs effectively. A patient-centered approach to interviewing, rather than a directive approach, is also more likely to be successful.

Ref: Cannarella Lorenzetti R, Jacques CHM, Donovan C, et al: Managing difficult encounters: Understanding physician, patient, and situational factors. *Am Fam Physician* 2013;87(6):419-425.

Item 45

ANSWER: A

There are no currently available medications that have been shown to delay progression of Parkinson's disease. However, guidelines recommend initiating the treatment of motor symptoms when they begin to affect the functions of daily life or decrease the quality of life. The first-line treatment for motor symptoms is carbidopa/levodopa due to its effectiveness for tremors, rigidity, and bradykinesia. It is a myth that delaying the use of levodopa will prevent a lack of efficacy later in the course of the illness, as what appears to be a lack of efficacy actually represents progression of the disease.

Amantadine can be used for patients under 65 years of age who are only experiencing tremors. Monoamine oxidase inhibitors such as rasagiline and non-ergot dopamine agonists such as ropinirole are not as effective as carbidopa/levodopa for motor symptoms, but they do not cause the dyskinesias and motor fluctuations seen with levodopa. Monoamine oxidase inhibitors are considered first-line therapy for patients under age 65 with mild motor symptoms.

Ref: Halli-Tierney AD, Luker J, Carroll DG: Parkinson disease. *Am Fam Physician* 2020;102(11):679-691. 2) Ahlskog JE: Common myths and misconceptions that sidetrack Parkinson disease treatment, to the detriment of patients. *Mayo Clin Proc* 2020;95(10):2225-2234.

Item 46

ANSWER: A

In the absence of red-flag symptoms such as nocturnal defecation, weight loss, or gastrointestinal bleeding, functional gastrointestinal disorders can be diagnosed using symptom-based clinical criteria. Symptoms such as recurrent abdominal pain related to defecation, pain related to a change in the frequency of defecation, abdominal bloating and distension, and loose and watery or lumpy and hard stools are used to diagnose functional bowel disorders. Noninvasive testing for *Helicobacter pylori*, celiac serology, gastric emptying studies, and esophagogastroduodenoscopy are not required in order to make a diagnosis.

Ref: Wilkinson JM, Cozine EW, Loftus CG: Gas, bloating, and belching: Approach to evaluation and management. *Am Fam Physician* 2019;99(5):301-309.

Item 47

ANSWER: B

Preeclampsia is diagnosed when the blood pressure is ≥140/90 mm Hg on two separate occasions after 20 weeks gestation, accompanied by proteinuria (>300 mg protein in a 24-hour urine collection or 2+ protein on a dipstick). If there is no protein in the urine, new-onset hypertension and the presence of any of the following would meet the criteria for preeclampsia: thrombocytopenia, renal insufficiency, impaired liver function, pulmonary edema, or cerebral or visual symptoms. This patient had preeclampsia during her previous pregnancies, which puts her at high risk for preeclampsia during her current pregnancy. Aspirin, 81 mg daily, is recommended for high-risk pregnant patients to prevent preeclampsia. Prophylaxis should begin after 12 weeks gestation and continue until delivery. Fish oil, magnesium, and vitamin C are not beneficial in the prevention of preeclampsia.

Ref: Henderson JT, Vesco KK, Senger CA, et al: Aspirin use to prevent preeclampsia and related morbidity and mortality: Updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA* 2021;326(12):1192-1206. 2) Aspirin use to prevent preeclampsia and related morbidity and mortality. *Am Fam Physician* 2022;105(4):online.

Item 48

ANSWER: A

The prevalence of heart failure has continued to increase due to the aging population in the United States. Dapagliflozin is approved by the FDA for the treatment of New York Heart Association class II–IV heart failure with reduced ejection fraction regardless of the presence of diabetes mellitus. Notably, recent studies showed a reduction in the worsening of heart failure and death from cardiovascular causes. Digoxin may be initiated in patients who remain symptomatic despite optimal therapy with other agents, but it does not affect morbidity or mortality. Isosorbide dinitrate/hydralazine provides a mortality benefit in patients who are unable to tolerate an ACE inhibitor or angiotensin receptor blocker. Ivabradine is a sinus node modulator and may reduce hospitalization or cardiovascular death in patients with a resting heart rate ≥70 beats/min who are taking a β-blocker at maximal dosage. Liraglutide reduces cardiovascular events in patients with diabetes but has no role in the treatment of heart failure.

Ref: Chavey WE, Hogikyan RV, Van Harrison R, Nicklas JM: Heart failure due to reduced ejection fraction: Medical management. *Am Fam Physician* 2017;95(1):13-20. 2) Yancy CW, Jessup M, Bozkurt B, et al: 2017 ACC/AHA/HFSA focused update of the 2013 ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *Circulation* 2017;136(6):e137-e161. 3) McMurray JJV, Solomon SD, Inzucchi SE, et al: Dapagliflozin in patients with heart failure and reduced ejection fraction. *N Engl J Med* 2019;381:1995-2008

Item 49

ANSWER: C

In March 2020, the FDA upgraded its warning label for montelukast to a boxed warning (black box warning) based on the trends for all neuropsychiatric adverse events, including suicidality, associated with montelukast use reported in the FDA Adverse Event Reporting System database from the date of FDA approval in February 1998 through May 2019 (SOR B). The boxed warning does not indicate an increased risk of delirium, myocardial infarction, or venous thromboembolism.

Ref: Drug safety and availability: FDA requires boxed warning about serious mental health side effects for asthma and allergy drug montelukast (Singulair); advises restricting use for allergic rhinitis. Food and Drug Administration, 2020.

Item 50

ANSWER: E

This is a typical history for a fixed drug eruption (FDE), which is an immunologic reaction that recurs upon re-exposure to the offending drug. It is most likely related to T-lymphocytes at the dermal-epidermal junction. Sulfonamides and anticonvulsants are the most frequently cited medications, but tetracycline and penicillins have also been reported to cause FDE. FDE is not caused by bacteria. Erythema multiforme does not present as an isolated, recurrent macule and generally has central clearing. Nummular eczema is a coin-shaped, very pruritic patch but does not fit this clinical scenario. Shiga toxin–producing *Escherichia coli* are rarely found in extra-intestinal sites.

Ref: Maloney G, Effron D: Fixed drug eruption. *Consultant* 2016;56(11):1043-1044. 2) Trayes KP, Savage K, Studdiford JS: Annular lesions: Diagnosis and treatment. *Am Fam Physician* 2018;98(5):283-291.

Item 51

ANSWER: B

This patient presents with erosive osteoarthritis that involves the distal interphalangeal (DIP) and proximal interphalangeal (PIP) joints with sparing of the metacarpophalangeal (MCP) joints. The primary goals for treating osteoarthritis are to control symptoms such as pain and stiffness and optimize function in order to preserve quality of life. Topical or oral NSAIDs are the most appropriate pharmacotherapy for osteoarthritis of the hand. Colchicine and methotrexate have not been studied for the treatment of osteoarthritis and their use for this condition is not recommended. Colchicine is indicated for the treatment of gout, which is usually pauciarticular and asymmetrical, and methotrexate is effective for rheumatoid arthritis. Conventional synthetic and biologic disease-modifying medications such as hydroxychloroquine and infliximab have not been shown to be effective in the treatment of osteoarthritis. These medications are appropriate for the treatment of systemic lupus erythematosus and rheumatoid arthritis, which have examination findings that involve the MCP and PIP joints but spare the DIP joints.

Ref: Pujalte GG, Albano-Aluquin SA: Differential diagnosis of polyarticular arthritis. *Am Fam Physician* 2015;92(1):35-41. 2) Kloppenburg M, Kroon FP, Blanco FJ, et al: 2018 Update of the EULAR recommendations for the management of hand osteoarthritis. *Ann Rheum Dis* 2019;78(1):16-24.

Item 52

ANSWER: E

Understanding individual, relational, societal, and community risk and protective factors associated with intimate partner violence (IPV) perpetration can help prevent it. Among the options listed, young age is an individual risk factor for committing IPV. IPV is most prevalent in adolescence and young adulthood and declines with age. A belief in strict gender roles, having few friends, low income, and unplanned pregnancy are also risk factors.

Ref: Preventing intimate partner violence across the lifespan: A technical package of programs, policies, and practices. Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, 2017. 2) Violence prevention: Risk and protective factors for perpetration. Centers for Disease Control and Prevention, reviewed 2020.

Item 53

ANSWER: D

Febrile neutropenia is a relatively common complication of chemotherapy. It usually occurs within 6 weeks of a chemotherapy treatment. It is defined as a single oral temperature of 38.5°C (101.3°F) or a sustained temperature of 38°C (100.4°F) for at least 1 hour in patients with an absolute neutrophil count (ANC) <500 cells/mm. This patient's ANC is 456 cells/mm. Such patients should be presumed to have a bacterial infection. For patients who meet the criteria for febrile neutropenia, guidelines recommend administration of empiric intravenous antibiotics within an hour of presentation. Early administration of intravenous antibiotics has been shown to reduce the potential 11% mortality rate of febrile neutropenia (SOR B).

Once the remainder of the laboratory results are available, a decision can be made about inpatient versus outpatient treatment in consultation with the patient's oncologist, but initial treatment should not be delayed. The patient may benefit symptomatically from acetaminophen but it is not an urgent consideration. Oral antibiotics have not been shown to be as effective as initial empiric treatment with an intravenous broad-spectrum antibiotic.

Ref: Taplitz RA, Kennedy EB, Bow EJ, et al: Outpatient management of fever and neutropenia in adults treated for malignancy: American Society of Clinical Oncology and Infectious Diseases Society of American clinical practice guideline update. *J Clin Oncol* 2018;36(14):1443-1453. 2) Higdon ML, Atkinson CJ, Lawrence KV: Oncologic emergencies: Recognition and initial management. *Am Fam Physician* 2018;97(11):741-748.

Item 54

ANSWER: A

Dysmenorrhea affects 50%–90% of females and the great majority of cases are primary dysmenorrhea, or pain that occurs in the absence of pelvic pathology. After a complete history confirming cyclic cramping pelvic pain beginning around the start of menses and a negative urine pregnancy test, empiric treatment should be offered (SOR C). First-line treatment is an NSAID at moderate to maximum dosing, such as naproxen, 500 mg every 12 hours. Any NSAID can be used and should be started 1–2 days before the onset of menses and continued through the first several days of bleeding. A secondary benefit to NSAID use is a reduction in heavy menstrual bleeding. Combined estrogen/progestin oral contraceptives may also be used as first-line therapy or in conjunction with NSAIDs.

While screening for sexually transmitted infections is important for sexually active adolescents, it is not indicated in the evaluation of dysmenorrhea. Neither pelvic examination nor imaging is indicated when the history is consistent with primary dysmenorrhea. If there is evidence of secondary dysmenorrhea (due to pelvic pathology or a recognized medical condition), then an examination and imaging are indicated. Family physicians are able to manage the majority of cases of primary dysmenorrhea. If there is no improvement in treatment after 3 months, referral to a gynecologist may be indicated.

Ref: McKenna KA, Fogleman CD: Dysmenorrhea. *Am Fam Physician* 2021;104(2):164-170.

Item 55

ANSWER: D

Symptoms of serotonin syndrome range from mild to life-threatening and typically appear minutes to hours after ingestion of serotonergic medications. SSRIs are the most commonly associated class of medication due to their widespread use. The Hunter Serotonin Toxicity Criteria are the most commonly used diagnostic tool. This patient has a history of serotonergic medication use, signs of inducible clonus, agitation, and diaphoresis, as well as hyperthermia. It is likely that the addition of dextromethorphan precipitated this episode. This patient's history does not suggest an overdose of methylphenidate, and there is little evidence in this scenario for a serious infectious process. Malignant hyperthermia generally appears over a longer period of time and does not typically induce clonus. There are few, if any, choices for medication therapy of concomitant attention-deficit/hyperactivity disorder and depression that do not increase the risk of serotonin syndrome, so patients on these regimens should be educated about the symptoms of serotonin syndrome and common causative agents.

Ref: Ables AZ, Nagubilli R: Prevention, recognition, and management of serotonin syndrome. *Am Fam Physician* 2010;81(9):1139-1142. 2) Wang RZ, Vashistha V, Kaur S, Houchens NW: Serotonin syndrome: Preventing, recognizing, and treating it. *Cleve Clin J Med* 2016;83(11):810-817.

Item 56

ANSWER: A

SGLT2 inhibitors such as dapagliflozin have increasingly been shown to be associated with diabetic ketoacidosis under certain circumstances. Liraglutide, metformin, pioglitazone, and sitagliptin are not associated with diabetic ketoacidosis.

Ref: Douros A, Lix LM, Fralick M, et al: Sodium-glucose cotransporter-2 inhibitors and the risk for diabetic ketoacidosis: A multicenter cohort study. *Ann Intern Med* 2020;173(6):417-425. 2) American Diabetes Association Professional Practice Committee; Draznin B, Aroda VR, Bakris G, et al: 9. Pharmacologic approaches to glycemic treatment: *Standards of Medical Care in Diabetes-2022. Diabetes Care* 2022;45(Suppl 1):S125-S143.

Item 57

ANSWER: D

Alcohol use disorder (AUD) is common in the United States but remains undertreated, especially with pharmacotherapy. FDA-approved therapies include naltrexone, acamprosate, and disulfiram. Non–FDA-approved therapies with evidence of benefit include baclofen and topiramate. AUD commonly coexists with other psychiatric conditions and in these situations treating those comorbid conditions is critical. For patients with coexisting depression or anxiety, buspirone, duloxetine, or fluoxetine could be considered in addition to one of the other medications listed to address AUD. Quetiapine, which is an antipsychotic, has no role in the treatment of AUD.

Ref: Kranzler HR, Soyka M: Diagnosis and pharmacotherapy of alcohol use disorder: A review. *JAMA* 2018;320(8):815-824.

Item 58

ANSWER: E

For women with no risk factors, the U.S. Preventive Services Task Force (USPSTF) recommends screening for osteoporosis in women 65 years and older with bone measurement testing such as DEXA to prevent osteoporotic fractures (grade B recommendation). The USPSTF recommends screening for osteoporosis with DEXA in postmenopausal women younger than age 65 who are at increased risk of osteoporosis, as determined by a formal clinical risk assessment tool (B recommendation). Factors associated with an increased risk of osteoporosis include smoking, excessive alcohol consumption, low body weight, and a parental history of hip fracture. This patient is not at increased risk for osteoporosis, so a DEXA scan at age 65 would be most appropriate. Calcium and vitamin D supplementation to prevent osteoporosis are no longer routinely recommended. Plain radiography would not be recommended as screening for osteoporosis.

Ref: *Final Recommendation Statement: Osteoporosis to Prevent Fractures: Screening*. US Preventive Services Task Force, 2018.

Item 59

ANSWER: D

Clozapine is a highly effective antipsychotic medication, but its use is limited due to its association with severe drug-induced neutropenia, also referred to as agranulocytosis. Patients must be enrolled in the national Clozapine Risk Evaluation and Mitigation Strategy (REMS) program to receive treatment, and all prescribers and pharmacies must be certified by this program in order to dispense clozapine. The patient's absolute neutrophil count must be submitted at least every 30 days, or more frequently as determined by stability in treatment. A signed patient consent form should be obtained but is not a part of the Clozapine REMS monitoring system. Monitoring serum clozapine levels and creatinine levels may be appropriate but is not part of the Clozapine REMS program. Family physicians can prescribe clozapine if registered and certified in the Clozapine REMS program, which includes passing a brief knowledge assessment, but specialty training in psychiatry is not required.

Ref: Clozaril drug label. US Food and Drug Administration, revised 2016. 2) Clozapine REMS Frequently Asked Questions. Clozapine REMS, 2021.

Item 60

ANSWER: E

Chronic cough in adults is a common presenting symptom for primary care visits. The four most common causes of chronic cough in adults include upper airway cough syndrome (UACS), asthma, nonasthmatic eosinophilic bronchitis, and reflux-related disorders. UACS, previously referred to as postnasal drip syndrome, is the most common cause of chronic cough in adults. This syndrome can have multiple etiologies, including chronic rhinosinusitis, allergic rhinitis, and nonallergic rhinitis. The diagnosis may be suggested by symptoms of rhinorrhea such as nasal stuffiness, sneezing, and postnasal drainage, but the absence of these symptoms does not rule out the diagnosis. The most common causes of chronic cough in children 6–14 years of age are asthma, protracted bacterial bronchitis, and UACS.

Ref: Michaudet C, Malaty J: Chronic cough: Evaluation and management. *Am Fam Physician* 2017:96(9):575-580.

Item 61

ANSWER: B

Most studies of aspirin for secondary prevention of cardiovascular disease involved prevention of recurrent strokes, and showed a reduction in recurrent strokes in patients taking 75–325 mg of aspirin daily. For this patient with a history of stroke, resuming aspirin at 81 mg daily would be clearly indicated. Multiple organizations have advised on the role of aspirin in the primary prevention of cardiovascular disease. In 2022 the U.S. Preventive Services Task Force released an update recommending against the initiation of low-dose aspirin for primary prevention of cardiovascular disease in adults ≥60 years of age as there is no net benefit. The American College of Cardiology/American Heart Association (ACC/AHA) came to a similar conclusion regarding primary prevention. Specifically, the ACC states that low-dose aspirin, 75–100 mg daily, should not be administered on a routine basis for the primary prevention of atherosclerotic cardiovascular disease in adults >70 years of age. There is no benefit in taking an aspirin dosage >325 mg daily. The apixaban dosage for stroke prophylaxis is 5 mg twice daily. When taking warfarin for stroke prophylaxis, the INR target is 2–3, not >3.

Ref: Dalen JE, Goldberg RJ, Waterbrook A, et al: Should senior citizens take aspirin daily to prevent heart attacks or strokes? *Am J Med* 2021;134(10):1185-1188. 2) *Final Recommendation Statement: Aspirin Use to Prevent Cardiovascular Disease: Preventive Medication.* US Preventive Services Task Force, 2022.

Item 62

ANSWER: A

Autosomal dominant polycystic kidney disease (ADPKD) is the most common hereditary cause of kidney disease and is a frequent cause of end-stage renal disease. The most common extrarenal cystic complication is the formation of liver cysts, which are found in >90% of patients with ADPKD who are older than 35 years of age. Other locations for ADPKD-related cyst formation include the pancreas, spleen, and reproductive system, although these are not as common as hepatic cysts. The most severe complication of ADPKD is intracranial aneurysms, which are 2–4 times more prevalent in patients with ADPKD than in the general population but are not as common as liver cysts.

Ref: Srivastava A, Patel N: Autosomal dominant polycystic kidney disease. *Am Fam Physician* 2014;90(5):303-307. 2) Cornec-Le Gall E, Alam A, Perrone RD: Autosomal dominant polycystic kidney disease. *Lancet* 2019;393(10174):919-935.

Item 63

ANSWER: C

This patient has diarrhea-predominant irritable bowel syndrome (IBS-D) and may benefit from validation of her symptoms and a clear diagnosis that has several substantiated treatment options. A 2021 clinical guideline from the American College of Gastroenterology (ACG) is based on a systematic review performed by a committee of experts in this field. Based on this review, soluble fiber (but not insoluble fiber) has good evidence for the alleviation of global IBS symptoms and is recommended strongly as a first-line intervention. In contrast, a gluten-free diet has not been shown to be beneficial for IBS. A diet low in fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP) has low-quality evidence supporting its benefit but merits a trial in patients who do not have an adequate response to fiber supplementation. The ACG has not commented on prebiotics as a treatment for IBS. A 2018 systematic review concluded that while there are small individual studies suggesting benefit for prebiotics (and probiotics) there is inadequate long-term consistent evidence to support their routine use. Probiotics have mixed and low-quality evidence for benefit in IBS. Because of the inconsistent data the ACG recommends against their use.

Ref: Ford AC, Harris LA, Lacy BE, et al: Systematic review with meta-analysis: The efficacy of prebiotics, probiotics, synbiotics and antibiotics in irritable bowel syndrome. *Aliment Pharmacol Ther* 2018;48(10):1044-1060. 2) Lacy BE, Pimentel M, Brenner DM, et al: ACG clinical guideline: Management of irritable bowel syndrome. *Am J Gastroenterol* 2021;116(1):17-44.

Item 64

ANSWER: D

Many homes rely on well water, particularly in rural areas. Unlike water from municipal supplies, well water is not tested routinely by government agencies, and it is generally the responsibility of the property owner to ensure the safety of the water. If there is cause for concern in regard to the well, appropriate testing should be performed, in this case for fecal coliforms. In most locations, the county health department or other government agency will test well water on request. The water should be retested following treatment, and not used for drinking, cooking, or bathing until it is known to be safe. Water can still be used for laundry, yard maintenance, or any purpose where ingestion is unlikely. Wells should be tested yearly, generally in the spring, and following flooding or other environmental concerns such as nearby excavation or dumping. While the treatment of bacterial contamination does require bleach in most cases, the dose is calculated by characteristics of the individual well, and most experts advise that treatment be done by a well drilling and maintenance company. Since all of this patient's family members are currently asymptomatic, there is no need to obtain stool samples.

Ref: Drinking water: Well testing. Centers for Disease Control and Prevention, 2009. 2) Drinking water: Overview of water-related diseases and contaminants in private wells. Centers for Disease Control and Prevention, 2021. 3) Private drinking water. US Environmental Protection Agency, updated 2021.

Item 65

ANSWER: D

A 2-hour, 75-g glucose tolerance test should be performed at 4–12 weeks post partum following a pregnancy in which gestational diabetes was diagnosed. This will identify patients who have developed diabetes mellitus, impaired fasting glucose, or impaired glucose tolerance. Women who have a history of gestational diabetes have a sevenfold increased risk of developing type 2 diabetes compared to women without a history of gestational diabetes.

This patient should not begin taking metformin because she may not be a candidate for treatment. Testing is required to make the diagnosis of diabetes mellitus, impaired fasting glucose, or impaired glucose tolerance.

If a patient who was diagnosed with gestational diabetes tests negative for diabetes mellitus on postpartum screening, fasting glucose levels should still be assessed every 1–3 years regardless of pregnancy status. With the next pregnancy the patient should have early screening with a 1-hour glucose tolerance test at the time the pregnancy is confirmed.

Ref: Practice bulletin no. 180: Gestational diabetes mellitus. *Obstet Gynecol* 2017;130(1):e17-e37.

Item 66

ANSWER: E

This patient's pretest probability for pulmonary embolism is high given his multiple risk factors, signs, and symptoms. The presence of a new onset of right bundle branch block in a patient presenting with a sudden onset of shortness of breath and chest pain, especially in the setting of active cancer, should raise suspicion of pulmonary embolism. Other EKG abnormalities include tachycardia or bradycardia, an S1Q3T3 pattern, atrial fibrillation, and T-wave inversions in the anterior leads. Patients with cancers of the pancreas and stomach have the highest risk of developing venous thromboembolism (VTE) and should receive pharmacologic VTE prophylaxis during hospitalizations.

In the absence of renal failure, a computed tomography pulmonary angiogram (CTPA) is the most appropriate diagnostic study and would be preferred over a ventilation-perfusion (V/Q) scan. A D-dimer level has a high negative predictive value in the diagnosis of pulmonary embolism; however, it has low specificity, and therefore a high rate of false positives, in patients with active cancer. An elevated troponin level can occur in the setting of pulmonary embolism and is nondiagnostic. Their principal value is in the diagnosis of acute myocardial infarction (SOR A). Doppler ultrasonography of the lower extremities helps identify and locate peripheral deep vein thrombosis and helps support but not confirm the diagnosis of pulmonary embolism. A V/Q scan is a reasonable option when CTPA is contraindicated.

Ref: Randel A: Diagnosing VTE: Guidelines from the American Society of Hematology. *Am Fam Physician* 2019;100(11):716-717. 2) VTE in patients with cancer: Guidelines from the American Society of Clinical Oncology. *Am Fam Physician* 2020;102(3):188-189.

Item 67

ANSWER: A

Osteochondrosis refers to degenerative changes in the epiphyseal ossification areas of growing bones. Legg-Calvé-Perthes disease is a type of osteochondrosis that affects the femoral head. Patients with Legg-Calvé-Perthes disease should be referred to an orthopedist and instructed to avoid all weight-bearing activities until reossification occurs. Osteochondrosis should be differentiated from apophysitis because the etiologies and management strategies differ. Apophysitis is a traction injury to the cartilage and bony attachments of tendons in growing children. Osgood-Schlatter disease, Sever's disease, and Sinding-Larsen-Johansson syndrome are apophysitis disorders that affect the anterior tibial tubercle, posterior heel, and inferior patellar pole, respectively. Treatment of apophysitis involves stretching, activity modification, icing, and limited use of NSAIDs.

Ref: Achar S, Yamanaka J: Apophysitis and osteochondritis: Common causes of pain in growing bones. *Am Fam Physician* 2019;99(10):610-618.

Item 68

ANSWER: A

This patient has psoriasis that is characterized by plaques on her extensor extremities and limited bleeding with removal of the scales (Auspitz sign). First-line treatment for localized plaques is topical corticosteroid therapy, such as clobetasol propionate lotion. Antifungals such as selenium sulfide lotion and terbinafine cream are used to treat dermatophytosis infections including tinea pedis and tinea versicolor. Permethrin cream is indicated for treatment of scabies and lice. Loratadine, an oral antihistamine, is used to treat urticaria.

Ref: Rupert J, Honeycutt JD: Pruritus: Diagnosis and management. *Am Fam Physician* 2022;105(1):55-64.

Item 69

ANSWER: E

Secondary forms of hypertension are common in patients with resistant hypertension, and sleep-disordered breathing is an important cause of resistant hypertension. Multiple studies have shown that excess aldosterone plays a key role in the association between the two. As rates of obesity and obstructive sleep apnea (OSA) have increased, the prevalence of resistant hypertension has also increased. It is estimated that almost 17%–22% of patients with resistant hypertension may have undiagnosed primary hyperaldosteronism. The increased expression of mineralocorticoid receptors in patients with a high BMI contributes to hyperaldosteronism, and blockage of these receptors with medications such as spironolactone has been shown to provide benefit in reducing the severity of OSA as well as hypertension in these patients.

Substituting one thiazide for another does not have a beneficial effect in patients with resistant hypertension. Switching β-blockers in this case is unlikely to have a significant impact on blood pressure and might have an adverse impact, as carvedilol has been shown to have more favorable effects on glycemic control and other components of metabolic syndrome relative to metoprolol tartrate in patients with diabetes. Increasing the angiotensin receptor blocker dosage or substituting an ACE inhibitor will not be as beneficial in controlling this patient's blood pressure.

Ref: Bakris GL, Fonseca V, Katholi RE, et al: Metabolic effects of carvedilol vs metoprolol in patients with type 2 diabetes mellitus and hypertension: A randomized controlled trial. *JAMA* 2004;292(18):2227-2236. 2) Pimenta E, Calhoun DA, Oparil S: Sleep apnea, aldosterone, and resistant hypertension. *Prog Cardiovasc Dis* 2009;51(5):371-380. 3) Guichard JL, Clark D 3rd, Calhoun DA, Ahmed MI: Aldosterone receptor antagonists: Current perspectives and therapies. *Vasc Health Risk Manag* 2013;9:321-331. 4) Valaiyapathi B, Calhoun DA: Role of mineralocorticoid receptors in obstructive sleep apnea and metabolic syndrome. *Curr Hypertens Rep* 2018;20(3):23. 5) Wang Y, Li CX, Lin YN, et al: The role of aldosterone in OSA and OSA-related hypertension. *Front Endocrinol (Lausanne)* 2021;12:801689.

Item 70

ANSWER: E

This patient has vocal cord dysfunction, sometimes called paradoxical vocal fold motion, a condition in which the vocal cords close during inspiration when they should be open. It is not entirely understood why this occurs but it is associated with other conditions including asthma, GERD, and anxiety disorders. It typically causes sudden, severe shortness of breath and often has a trigger such as exercise, gastroesophageal reflux, inhalation of an irritant, or stress. Symptoms may include chest or throat tightness, inspiratory stridor, and wheezing predominantly over the upper airway. In less severe situations the voice may be impacted, and patients sometimes also describe a chronic cough that occurs separately from more acute symptoms. Vocal cord dysfunction is confirmed by direct visualization of the vocal cords during inspiration via nasolaryngoscopy. Pulmonary function tests are often performed as part of the assessment for shortness of breath and, if performed while the patient is experiencing symptoms, will show a flattened inspiratory flow loop. Treatment is primarily focused on therapeutic breathing maneuvers and vocal cord relaxation techniques. A speech therapist may assist in instructing patients in these techniques. Associated conditions should also be treated to help prevent vocal cord dysfunction. A sleep study, chest radiography, chest CT, and esophagogastroduodenoscopy would not confirm a diagnosis of vocal cord dysfunction.

Ref: Malaty J, Wu V: Vocal cord dysfunction: Rapid evidence review. *Am Fam Physician* 2021;104(5):471-475.

Item 71

ANSWER: A

The initial tests used in the workup for suspected hemochromatosis are a serum ferritin level and transferrin saturation. A transferrin saturation >45% and a serum ferritin level >300 ng/mL in men or >200 ng/mL in women are indicative of iron overload and highly suggestive of hereditary hemochromatosis. A serum iron level is ordered as part of transferrin saturation testing, but an elevated iron level by itself is not as sensitive or specific as the other tests. Other etiologies of iron overload should be ruled out, including liver disease, alcohol abuse, and metabolic syndrome. If no secondary etiologies are found, genetic testing would be appropriate to identify HFE mutations indicating hereditary hemochromatosis. Genetic testing should not be performed in a patient without iron overload or a family history of hereditary hemochromatosis. MRI may help determine the risk of developing cirrhosis, and a liver biopsy is used to determine the amount of liver damage.

Ref: Kane SF, Roberts C, Paulus R: Hereditary hemochromatosis: Rapid evidence review. *Am Fam Physician* 2021;104(3):263-270.

Item 72

ANSWER: C

This patient has posttraumatic stress disorder (PTSD). She was exposed to threatened death and injury (*DSM-5* criterion A) and exhibits multiple symptoms from several clusters of the *DSM-5* criteria for PTSD (reliving of the traumatic event [criterion B], avoidance of trauma-related stimuli [criterion C], negative thoughts or feelings that began or worsened after the trauma [criterion D], and trauma-related arousal and reactivity that began or worsened after the trauma [criterion E]). She has symptoms that have caused distress and functional impairment for more than 1 month and are not triggered by medication or substance use (criteria F–H). Individual, trauma-focused psychotherapy has strong evidence for benefit in the treatment of PTSD and is recommended as the first-line treatment. If psychotherapy is not available or preferred by the patient, pharmacotherapy is then recommended. Among the options listed, fluoxetine has the strongest evidence of efficacy as monotherapy for PTSD. There is a lack of evidence for the efficacy of benzodiazepines such as clonazepam, antiepileptics such as divalproex, and atypical antipsychotics such as quetiapine and risperidone. Furthermore, risks outweigh any potential benefits from these medications.

Ref: VA/DoD clinical practice guideline for the management of posttraumatic stress disorder and acute stress. US Department of Veterans Affairs, 2017. 2) Saguil A: Psychological and pharmacologic treatments for adults with PTSD. *Am Fam Physician* 2019;99(9):577-583.

Item 73

ANSWER: D

Telemedicine can be helpful in the management of many chronic conditions, including diabetes mellitus. Medicare and most private insurers pay for telemedicine visits at the same rate as in-person visits. Teleretinal screening performed at the primary care provider's office should be considered in patients with diabetes as a cost-effective option for improving retinopathy screening rates (SOR B). Eyecare specialists can remotely evaluate the retinal photos for timely completion of annual retinopathy screening. Counseling about the importance of retinal screening, digital reminders, office-wide prize drawings, and sharing office space with an ophthalmologist have not been proven to be effective in increasing retinal screening rates in patients with diabetes.

Ref: Mullur RS, Hsiao JS, Mueller K: Telemedicine in diabetes care. *Am Fam Physician* 2022;105(3):281-288.

Item 74

ANSWER: E

The prompt recognition of heatstroke is critical to effective treatment. Heatstroke is characterized by a core temperature >40°C (104°F) in association with neurologic abnormalities such as headache, confusion, altered mental status, irritability, and seizure. Exercise-associated collapse, previously called heat syncope, generally occurs immediately after strenuous exercise and is more associated with hydration status. Heat edema is a benign condition manifested by mild swelling in the extremities and facial flushing in a patient with a normal temperature. Heat exhaustion may involve neurologic symptoms but is associated with a lower temperature (38.3°C–40.0°C [101°F–104°F]) and thus a better outcome. Like heatstroke, heat injury can be associated with a temperature >40°C, but does not involve neurologic symptoms. Instead, kidney, muscle, or liver injury may be present.

Ref: Lipman GS, Eifling KP, Ellis MA, et al: Wilderness Medical Society practice guidelines for the prevention and treatment of heat-related illness. *Wilderness Environ Med* 2013;24(4):351-361. 2) Gauer R, Meyers BK: Heat-related illnesses. *Am Fam Physician* 2019;99(8):482-489.

Item 75

ANSWER: A

Paget disease of bone is the second most common metabolic bone disorder after osteoporosis and has a lifetime prevalence of 1%–2% in the United States. Only 30%–40% of patients have symptoms such as bone pain at diagnosis. Most patients are diagnosed after an incidental finding of elevated alkaline phosphatase (ALP) on routine laboratory studies or by plain films performed for another reason. When an elevated ALP level is found in an asymptomatic patient, other liver function tests such as a gamma-glutamyl transaminase level should be performed to evaluate for hepatobiliary pathology. If negative, this should be followed by plain radiography of the skull and tibia, and an enlarged view of the pelvis to assess for lytic lesions and cortical thickening. If plain radiography is consistent with Paget disease of bone, a radionuclide bone scan is performed to assess the full extent of the disease. Bisphosphonates are the first-line treatment in active disease, which is signified by bone pain, hearing loss, and lytic lesions. Right upper quadrant ultrasonography, a full-body CT scan, and a HIDA scan would not be the most appropriate next step in the evaluation.

Ref: Ralston SH: Paget's disease of bone. *N Engl J Med* 2013;368(7):644-650. 2) Rianon NJ, des Bordes JK: Paget disease of bone for primary care. *Am Fam Physician* 2020;102(4):224-228.

Item 76

ANSWER: C

This patient's tuberculosis (TB) screening test is positive, and the next step in the evaluation involves determining whether he has a latent infection or active disease. Diagnosis of latent TB requires ruling out active disease by assessing the patient clinically with a history, physical examination, and chest radiograph. If this evaluation does not suggest active disease, sputum studies are not needed. Interferon-gamma release assays (IGRA), which are blood tests used to screen for TB infection, are more accurate than tuberculin skin testing, so a tuberculin skin test is not needed. Treatment should not be started until a determination of latent versus active TB is made.

Ref: Shah M, Dorman SE: Latent tuberculosis infection. *N Engl J Med* 2021;385(24):2271-2280.

Item 77

ANSWER: B

The central role of inflammation in the progression of coronary disease is well recognized and the use of an anti-inflammatory medication may improve outcomes in these patients. The low-dose colchicine (LoDoCo2) trial evaluated colchicine, 0.5 mg daily, versus placebo in patients with chronic coronary artery disease and found a 30% risk reduction in cardiovascular deaths, spontaneous myocardial infarctions, ischemic stroke, and ischemia-driven revascularization. It did not find any observable difference with regard to new-onset atrial fibrillation, deep vein thrombosis, diabetes mellitus, or pulmonary embolism. Of note, the trial excluded individuals with heart failure or renal impairment.

At one time, azithromycin had shown some evidence in the secondary prevention of cardiovascular disease, but subsequent trials did not show the same benefit. Studies of fish oil capsules that contain marine omega-3 fatty acid supplements mixed with EPA/DHA formulations have failed to show cardiovascular benefit in patients with known cardiovascular disease. Similarly, niacin does not reduce overall mortality, cardiovascular mortality, or noncardiovascular mortality. The benefits of niacin therapy in the prevention of cardiovascular disease events are not well proven.

Ref: Nidorf M, Thompson PL: Effect of colchicine (0.5 mg twice daily) on high-sensitivity C-reactive protein independent of aspirin and atorvastatin in patients with stable coronary artery disease. *Am J Cardiol* 2007;99(6):805-807. 2) Nidorf SM, Fiolet ATL, Mosterd A, et al: Colchicine in patients with chronic coronary disease. *N Engl J Med* 2020;383(19):1838-1847. 3) Fernández-Ruiz I: Low-dose colchicine shows promise in chronic coronary disease. *Nat Rev Cardiol* 2020;17(11):680-681. 4) Abdelhamid AS, Brown TJ, Brainard JS, et al: Omega-3 fatty acids for the primary and secondary prevention of cardiovascular disease. *Cochrane Database Syst Rev* 2020;3(3):CD003177.

Item 78

ANSWER: D

Although many providers assume short-term systemic corticosteroids are safe, evidence shows multiple negative effects including elevated blood glucose and blood pressure, mood and sleep disturbance, and an increased risk of sepsis and venous thromboembolism. There are adequate trials to support the use of systemic corticosteroids within 3 days of the onset of Bell's palsy (SOR A). Adequate studies recommend against prescribing systemic corticosteroids for acute bronchitis in the absence of underlying asthma or COPD, or acute sinusitis (SOR B). There is insufficient evidence (SOR B) to support the routine use of systemic corticosteroids for patients with acute pharyngitis or lumbar radiculopathy.

Ref: Dvorin EL, Ebell MH: Short-term systemic corticosteroids: Appropriate use in primary care. *Am Fam Physician* 2020;101(2):89-94.

Item 79

ANSWER: E

Phytophotodermatitis is an inflammation and/or discoloration of the skin caused by contact with specific plants followed by exposure to sunlight. Limes are commonly associated with this phenomenon. Addison's disease causes generalized hyperpigmentation and has an insidious onset along with other constitutional symptoms such as anorexia, nausea, and weakness. An allergic reaction would likely be pruritic and a chemical burn would be expected to be painful. Cellulitis would also be uncomfortable and would likely be associated with erythema.

Ref: Walls RM, Hockberger RS, Gausche-Hill M, et al (eds): *Rosen's Emergency Medicine: Concepts and Clinical Practice*, ed 9. Elsevier, 2018, pp 724-725, 1445-1447. 2) Melmed S, Auchus RJ, Goldfine AB, et al: *Williams Textbook of Endocrinology*, ed 14. Elsevier, 2020, pp 521-522. 3) Maniam G, Light KM, Wilson J: Margarita burn: Recognition and treatment of phytophotodermatitis. *J Am Board Fam Med* 2021;34(2):398-401. 4) Dinulos JGH: *Habif's Clinical Dermatology: A Color Guide to Diagnosis and Therapy*, ed 7. Elsevier, 2021, p 336.

Item 80

ANSWER: E

The varicella vaccine is a live virus vaccine that is contraindicated during pregnancy because of the potential for fetal infection. The indications for hepatitis A, hepatitis B, rabies, and Tdap vaccines are the same for pregnant patients and nonpregnant patients.

Ref: Pregnancy and vaccination: Guidelines for vaccinating pregnant women. Centers for Disease Control and Prevention, updated 2016.

Item 81

ANSWER: C

The diagnostic cutoff point for type 2 diabetes is a fasting plasma glucose level ≥126 mg/dL or a hemoglobin A_{1c} ≥6.5%. The diagnosis requires confirmation by repeat testing or by obtaining both a fasting glucose level and hemoglobin A_{1c}.

Ref: American Diabetes Association Professional Practice Committee: 9. Pharmacologic approaches to glycemic treatment: *Standards of Medical Care in Diabetes—2022. Diabetes Care* 2022;45(Suppl 1):S125-S143.

Item 82

ANSWER: B

The forward bend test, combined with a scoliometer measurement, is the most appropriate initial test when evaluating for scoliosis. A scoliometer should be used with the patient's spine parallel to the floor (bent over to approximately 90°), with the arms hanging down, palms together, and feet pointing forward. If 5°–7° of trunk rotation is assessed by the scoliometer or by a scoliometer app on a smartphone, radiography can be performed to assess the Cobb angle. This radiography should be performed with the patient upright. A Cobb angle >20° may signify scoliosis, which may benefit from bracing, depending on skeletal maturity. Comparing the length from the pelvic brim to the pelvic floor on the left and the right is not indicated in the evaluation for scoliosis.

The U.S. Preventive Services Task Force changed its recommendation for scoliosis screening from grade D to grade I in 2018. Bracing has been found to reduce by over 50% the chance that mild to moderate curvatures will progress to curvatures of greater than 50°.

Ref: Hresko MT, Schwend RM, Hostin RA: Early detection of scoliosis—What the USPSTF "I" means for us. *JAMA Pediatr* 2018;172(3):216-217. 2) Kuznia AL, Hernandez AK, Lee LU: Adolescent idiopathic scoliosis: Common questions and answers. *Am Fam Physician* 2020;101(1):19-23.

Item 83

ANSWER: C

A walker would be the most appropriate assistive device for this patient given her balance limitations and bilateral extremity pain. Canes are most effective for unilateral lower extremity limitations and should be held in the hand opposite the affected leg and advanced simultaneously with the affected leg. Using a cane also requires good balance and dexterity, which are limited in this patient. Crutches require significant upper body strength, balance, and increased energy expenditure, which makes their use impractical in many older adults. Wheelchairs are generally the last option, as patients who can walk should do so to maintain function and avoid deconditioning. Referral to a physical therapist can be helpful to determine the most appropriate assistive device.

Ref: Sehgal M, Jacobs J, Biggs WS: Mobility assistive device use in older adults. *Am Fam Physician* 2021;103(12):737-744.

Item 84

ANSWER: E

Obstructive sleep apnea (OSA) is a common disorder that, if left untreated, can be associated with other serious health conditions such as atrial fibrillation, depression, heart failure, and stroke. Positive pressure therapy is effective and considered the first-line treatment for OSA, although some patients are unable to tolerate this therapy. In obese patients with OSA, bariatric surgery has been shown to reliably result in improvement in >75% of patients and result in remission in 40% of patients after 2 years. Nasal dilator devices and pharmacologic interventions such as clonidine have not been shown to improve symptoms or to be effective for treatment. Positional therapy is not recommended as a long-term solution for severe OSA due to poor long-term compliance. Currently there is insufficient evidence to support oral procedures such as uvulopalatopharyngoplasty as primary interventions for OSA.

Ref: Buchwald H, Avidor Y, Braunwald E, et al: Bariatric surgery: A systematic review and meta-analysis. *JAMA* 2004;292(14):1724-1737. 2) Sundaram S, Lim J, Lasserson TJ: Surgery for obstructive sleep apnea in adults. *Cochrane Database Syst Rev* 2005;(4):CD001004. 3) Randerath WJ, Verbraecken J, Andreas S, et al: Non-CPAP therapies in obstructive sleep apnea. *Eur Respir J* 2011;37(5):1000-1028. 4) de Vries GE, Hoekema A, Doff MHJ, et al: Usage of positional therapy in adults with obstructive sleep apnea. *J Clin Sleep Med* 2015;11(2):131-137. 5) Gottlieb DJ, Punjabi NM: Diagnosis and management of obstructive sleep apnea: A review. *JAMA* 2020;323(14):1389-1400.

Item 85

ANSWER: E

The Mediterranean diet has moderate to strong evidence for reducing the incidence of cardiovascular disease and associated mortality, preventing type 2 diabetes, decreasing overall mortality, and treating obesity. Intermittent fasting has been shown to be effective in weight loss, although not clearly more effective than overall calorie restriction, but a decrease in cardiovascular risk has not been shown. Low-fat, low-cholesterol diets may lead to substituting foods with increased sugar and overall calories. A low-carbohydrate diet has been shown to have more beneficial effects on lipid profiles than a low-fat diet. Additionally, mono- and polyunsaturated fats are actually beneficial in cardiovascular health, so focusing on a low-fat diet may be counterproductive. Low-carbohydrate diets can be useful to promote weight loss and decrease the incidence of type 2 diabetes, but their impact on cardiovascular disease is less clear. It is recommended that less than 5%–10% of total calories should come from added sugars, but a diet very low in carbohydrates may excessively limit healthy carbohydrates such as those found in whole grains, fruits, and vegetables.

Ref: Shaughnessy AF: Low-carbohydrate diet better than low-fat diet to reduce cardiovascular risk factors and cause weight loss. *Am Fam Physician* 2015;91(4):262. 2) Locke A, Schneiderhan J, Zick SM: Diets for health: Goals and guidelines. *Am Fam Physician* 2018;97(11):721-728. 3) Estruch R, Ros E, Salas-Salvadó J, et al: Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with extra-virgin olive oil or nuts. *N Engl J Med* 2018;378(25):e34. 4) Allaf M, Elghazaly H, Mohamed OG, et al: Intermittent fasting for the prevention of cardiovascular disease. *Cochrane Database Syst Rev* 2021;1(1):CD013496.

Item 86

ANSWER: C

This patient presents with signs and symptoms of acute cholecystitis, and ultrasonography confirms the presence of gallstones and gallbladder inflammation. While most patients with acute cholecystitis will have symptoms that improve with supportive care over 2–7 days, the risk of recurrent symptoms and complications increases with delayed surgical intervention. The Choosing Wisely initiative recommends that surgical treatment be offered to the patient during the initial hospitalization. The Society of American Gastrointestinal and Endoscopic Surgeons has found that laparoscopic cholecystectomy is safe and cost-effective in the immediate hospital setting. This stable, uncomplicated patient should be offered laparoscopic cholecystectomy during the current visit. Offering outpatient options such as expectant management and surgical consultation at a later date may increase this patient's risk of recurrent symptoms and complications as well as costs. Since she does not have signs of obstructive cholangitis such as elevated liver enzymes and jaundice, endoscopic retrograde cholangiopancreatography (ERCP) is not indicated.

Ref: Abraham S, Rivero HG, Erlikh IV, et al: Surgical and nonsurgical management of gallstones. *Am Fam Physician* 2014;89(10):795-802. 2) Society of American Gastrointestinal and Endoscopic Surgeons: Don't discharge patients presenting emergently with acute cholecystitis without first offering laparoscopic cholecystectomy. ABIM Foundation, Choosing Wisely campaign, 2019. 3) Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, pp 2641-2652.

Item 87

ANSWER: B

Climate change is responsible for multiple negative impacts on patient health, including furthering the spread of multiple infectious diseases, a decline in mental health due to weather-related natural disasters, an increased risk of allergies, and increased exacerbation of cardiopulmonary conditions. Following a plant-based diet, transitioning to more active modes of transportation, and working within the health care system to help decrease greenhouse emissions can positively impact climate change.

Ref: Parker CL, Wellbery CE, Mueller M: The changing climate: Managing health impacts. *Am Fam Physician* 2019;100(10):618-626.

Item 88

ANSWER: D

In a female younger than 40 years of age, elevated FSH and LH levels indicate primary ovarian insufficiency. Ovarian insufficiency leads to low estrogen levels, which stimulate increased production of FSH in the pituitary in a feedback loop. In this scenario, LH levels are high but do not rise as much as FSH levels.

Normal FSH and LH levels may indicate an outflow tract obstruction. Low FSH and LH levels indicate that the hypothalamic-pituitary axis is suppressed, as in the female athlete triad when there is an excess of energy expenditure compared to intake. Low FSH and elevated LH levels may be detected immediately prior to ovulation as part of a normal cyclical pattern.

Ref: Klein DA, Paradise SL, Reeder RM: Amenorrhea: A systematic approach to diagnosis and management. *Am Fam Physician* 2019;100(1):39-48.

Item 89

ANSWER: D

A higher frequency of family meals is associated with improved dietary quality, as evidenced by increased consumption of fruits, vegetables, and grains. Eating meals together as a family on most days or every day is protective against purging and binge eating, as well as frequent dieting, which is a risk factor for both obesity and eating disorders. Parental talk about weight revolving around their children or their own dieting is linked to becoming overweight. Meals that are home-prepared and undistracted are also beneficial to maintaining healthy weight and attitudes toward food.

Ref: Golden NH, Schneider M, Wood C, et al; Committee on Nutrition; Committee on Adolescence; Section on Obesity: Preventing obesity and eating disorders in adolescents. *Pediatrics* 2016;138(3):e20161649.

Item 90

ANSWER: B

Aerobic exercise, a balanced diet, good sleep hygiene, and weight reduction are appropriate strategies for the management of fibromyalgia, and treatment goals should be focused on improving function and quality of life, along with managing symptoms. According to the 2017 European League Against Rheumatism, exercise is the strongest and most critical treatment for fibromyalgia. Not only does it lessen fibromyalgia symptoms, but it can also help with coexisting conditions including sleep disorders, depression, and anxiety. While some studies show improvement in symptoms with acupuncture, most evidence is low to moderate in quality. A Cochrane review found that acupuncture was superior to no treatment at all, but not superior to sham acupuncture. Pharmacologic treatments have shown only modest benefits and are often accompanied by adverse effects, so they are best used in conjunction with nonpharmacologic therapies.

Ref: Bair MJ, Krebs EE: Fibromyalgia. *Ann Intern Med* 2020;172(5):ITC33-ITC48.

Item 91

ANSWER: E

The single most important determinant of the risk that an abdominal aortic aneurysm (AAA) will rupture is the diameter of the aneurysm. In men, aneurysm repair is recommended when the aneurysm reaches 5.5 cm in diameter. In women, whose aortas tend to be smaller, the recommended maximum diameter is 5.0 cm. Age, sex, a history of hypertension, and a history of smoking all increase the risk of developing an AAA, but do not increase the risk of rupture.

Ref: Schanzer A, Oderich GS: Management of abdominal aortic aneurysms. *N Engl J Med* 2021;385(18):1690-1698.

Item 92

ANSWER: E

Borderline personality disorder is characterized by emotional dysregulation, unstable self-image, and instability in interpersonal relationships. Patients with borderline personality disorder frequently overvalue and then rapidly devalue relationships, depending on perceived rejection. Cognitive behavioral therapy, specifically dialectical behavioral therapy and mentalization-based therapy, has shown the best efficacy in treating borderline personality disorder (SOR B). Pharmacologic treatments, including mood stabilizers, fatty acids, antipsychotics, and antidepressants, have been utilized in the treatment of borderline personality disorder despite limited or low-quality evidence, and would not be considered first-line therapy.

Ref: Mendez-Miller M, Naccarato J, Radico JA: Borderline personality disorder. *Am Fam Physician* 2022;105(2):156-161.

Item 93

ANSWER: B

Lung cancer is the second most common cancer in both women and men, after breast cancer for women and prostate cancer for men. It is the leading cause of cancer deaths in the United States, making it important for primary care providers to screen for this disease process. The primary risk factor for lung cancer is tobacco smoking, which accounts for 90% of all lung cancer cases. Lung cancer has a relatively poor prognosis, but early-stage lung cancer is more amenable to treatment and has a better prognosis. Low-dose CT has a reasonable specificity and high sensitivity for lung cancer in patients at high risk. The eligibility criteria were recently updated by the U.S. Preventive Services Task Force due to evidence of mortality benefit, with a recommendation for screening to begin at age 50 for patients with a 20-pack-year smoking history who are current smokers or have quit within the past 15 years.

Ref: Marshall RC, Tiglao SM, Thiel D: Updated USPSTF screening guidelines may reduce lung cancer deaths. *J Fam Pract* 2021;70(7):347-349. 2) Henderson LM, Rivera MP, Basch E: Broadened eligibility for lung cancer screening: Challenges and uncertainty for implementation and equity. *JAMA* 2021;325(10):939-941. 3) *Final Recommendation Statement: Lung Cancer: Screening*. US Preventive Services Task Force, 2021.

Item 94

ANSWER: A

Given this patient's substantial burden of multimorbidity as well as ongoing patterns of high acute care utilization, he is at very high risk for readmission upon discharge. Although there has been significant heterogeneity across interventions over the last decade in optimizing transitions of care for high-risk patients, many analyses, including systematic reviews, have identified medication reconciliation and close follow-up with a primary care physician to be among the components critical to success, along with a home visit from either a nursing team member or a licensed independent practitioner. There is no clear evidence that rapid post-discharge laboratory studies improve outcomes. While there may be a tendency to focus on disease-specific interventions via specialty care, the preponderance of evidence supports a holistic focus through comprehensive primary care follow-up. Primary care continuity and accountability for care after discharge are also key components valued by patients and caregivers.

Ref: Verhaegh KJ, MacNeil-Vroomen JL, Eslami S, et al: Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health Aff (Millwood)* 2014;33(9):1531-1539. 2) Shen E, Koyama SY, Huynh DN, et al: Association of a dedicated post-hospital discharge follow-up visit and 30-day readmission risk in a Medicare Advantage population. *JAMA Intern Med* 2017;177(1):132-135. 3) Mitchell SE, Laurens V, Weigel GM: Care transitions from patient and caregiver perspectives. *Ann Fam Med* 2018;16(3):225-231. 4) Tomlinson J, Cheong VL, Fylan B, et al: Successful care transitions for older people: A systematic review and meta-analysis of the effects of interventions that support medication continuity. *Age Ageing* 2020;49(4):558-569.

Item 95

ANSWER: D

Glaucoma and other common eye conditions cause a range of visual disturbances. Glaucoma is typically associated with blurring of peripheral vision as elevated pressure in the eye pushes on the periphery of the ophthalmic nerve. Central vision loss with peripheral sparing is classically seen with macular degeneration. Halos and decreased night vision are classic problems for patients with cataracts. Intermittent complete blackening of the visual field may be seen with ischemia associated with stroke or temporal arteritis. Sudden scattered floaters should raise concern for retinal detachment.

Ref: Pelletier AL, Rojas-Roldan L, Coffin J: Vision loss in older adults. *Am Fam Physician* 2016;94(3):219-226. 2) Stein JD, Khawaja AP, Weizer JS: Glaucoma in adults—Screening, diagnosis, and management. *JAMA* 2021;325(2):164-174.

Item 96

ANSWER: D

The cough stress test confirms that this patient is experiencing chronic stress urinary incontinence. In addition to other behavioral modifications such as appropriate fluid intake, timed voiding, the reduction of caffeinated and carbonated beverages, regular moderate physical activity, and weight loss, pelvic floor muscle training is a first-line treatment for stress urinary incontinence. There are no FDA-approved oral medications for the treatment of stress incontinence. Oral antimuscarinic agents and onabotulinumtoxinA are approved for use in urge incontinence. Intravaginal estrogen can be used to treat underlying vaginal and vulvar atrophy that can contribute to urinary incontinence, but it has not been approved by the FDA for the treatment of urinary incontinence. This patient does not have concurrent atrophic vaginitis so she would not be an appropriate candidate for intravaginal estrogen. Surgical intervention with urethropexy or sling procedures can be considered if conservative treatment with behavioral modification and pelvic floor muscle training fails.

Ref: Hu JS, Pierre EF: Urinary incontinence in women: Evaluation and management. *Am Fam Physician* 2019;100(6):339-348.

Item 97

ANSWER: D

Incision and drainage of an abscess along with MRSA antibiotic coverage is recommended for all abscesses greater than 2×2 cm. Incision and drainage of an abscess is almost always indicated and is a cornerstone of treatment. A wound culture with antibiotic sensitivity must be obtained in all cases to guide therapy. MRSA is the most common causative pathogen, so an antibiotic that provides coverage against MRSA, such as sulfamethoxazole/trimethoprim, doxycycline, or clindamycin, should be used as an empiric first-line agent for treatment of a skin abscess, pending culture results. Additional anaerobic coverage is recommended when an abscess is located in the perirectal area or when an abscess occurs in an area where tissue ischemia is likely.

Continuing current management with follow-up in 48 hours is not recommended due to the potential for expansion of the abscess in patients with diabetes mellitus (SOR A). When an abscess is less than 2×2 cm, incision and drainage is often the only recommended intervention, and treatment with antibiotics is typically not indicated in such cases. Most patients with uncomplicated skin abscesses can be managed in the outpatient setting. The presence of certain host factors such as poorly controlled type 2 diabetes, surrounding cellulitis, rapid progression, signs and symptoms of systemic illness, associated comorbidities or immunosuppression, extremes of age, an abscess in an area difficult to drain, and underlying tissue ischemia/gangrene are indications for hospitalization and parenteral antibiotics. Linezolid is reserved for patients who are allergic or intolerant to commonly used anti-MRSA antibiotics. Because linezolid has limited anaerobic coverage, it is not recommended when anaerobic infection is likely.

Ref: Liu C, Bayer A, Cosgrove SE, et al: Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant *Staphylococcus aureus* infections in adults and children. *Clin Infect Dis* 2011;52(3):e18-e55.

Item 98

ANSWER: B

Pregnant patients with hypothyroidism require increased dosages of levothyroxine as early as the first 4 weeks of pregnancy. General recommendations advise taking an extra dose 2 days per week for a total of 9 weekly doses, which is roughly a 30% increase. The TSH level should be monitored every 4 weeks during pregnancy, and the levothyroxine dosage should be titrated to the pregnancy-specific reference range, which is generally lower than the normal reference range. Referral to an endocrinologist to manage fluctuating levels should be considered. Untreated hypothyroidism can lead to adverse pregnancy outcomes including spontaneous abortion, preterm birth, preeclampsia, and placental abruption.

Ref: Wilson SA, Stem LA, Bruehlman RD: Hypothyroidism: Diagnosis and treatment. *Am Fam Physician* 2021;103(10):605-613.

Item 99

ANSWER: E

This patient presents with stable angina and documented coronary atherosclerosis. His slight troponin elevation is a marker of elevated risk. The addition of low-dose rivaroxaban to aspirin has been shown to decrease cardiac and all-cause mortality in patients with coronary artery disease (CAD) and may be offered to this patient (SOR A). Dual antiplatelet therapy with clopidogrel and aspirin is recommended for 1 year after stenting but is not recommended in patients with stable angina who do not have stents. Colchicine has been associated with decreased cardiac events in patients with CAD but may increase all-cause mortality. Icosapent ethyl has been shown to decrease cardiac events but not mortality in patients with hypertriglyceridemia >150 mg/dL. Isosorbide mononitrate may be indicated to improve angina symptoms but does not improve mortality risk.

Ref: Braun MM, Stevens WA, Barstow CH: Stable coronary artery disease: Treatment. *Am Fam Physician* 2018;97(6):376-384. 2) Joshi PH, de Lemos JA: Diagnosis and management of stable angina: A review. *JAMA* 2021;325(17):1765-1778.

Item 100

ANSWER: C

Palliative care can be offered to patients of any age with serious illness. It can be provided at any stage of the illness and there are no life-expectancy criteria. Unlike hospice, patients receiving palliative care may simultaneously undergo aggressive therapy. Palliative care can be offered in any setting, including via telehealth. It has been shown that patients receiving palliative care incur fewer health care costs than patients receiving usual care. The Choosing Wisely campaign recommends early referral to palliative care, as it improves patient care, increases patient satisfaction, and reduces costs. While Medicare covers hospice care through bundled payments, there is no similar coverage for palliative care, which can limit access. Commercial coverage for palliative care is inconsistent.

Ref: Beasley A, Bakitas MA, Edwards R, Kavalieratos D: Models of non-hospice palliative care: A review. *Ann Palliat Med* 2019;8(Suppl 1):S15-S21. 2) American Academy of Hospice and Palliative Medicine: Don't delay palliative care for a patient with serious illness who has physical, psychological, social or spiritual distress because they are pursuing disease-directed treatment. ABIM Foundation Choosing Wisely campaign, 2021.

Item 101

ANSWER: C

Most sinus infections are viral in origin, although there are specific circumstances in which antibiotics are appropriate. This patient exhibits all of the diagnostic clues that are most reliable for determining a bacterial etiology for the sinus infection: worsening symptoms with a new fever of 38.9°C (102°F), duration >10 days, signs of double sickening, unilateral facial and tooth pain, and cacosmia (perception of a foul odor). Since 2012, the Infectious Diseases Society of America, the CDC, and Sanford have all changed their recommendations to amoxicillin/clavulanate as the first-line antibiotic of choice due to emerging antibiotic resistance. However, in practice, azithromycin is commonly prescribed despite significant *Streptococcus pneumoniae* resistance of approximately 40% or higher. One-third of bacterial sinus infections are caused by *S. pneumoniae*, another one-third by *Haemophilus influenzae*, and the remainder by *Moraxella catarrhalis*, group A *Streptococcus*, *Staphylococcus aureus*, and anaerobes.

Previous guidelines recommended treatment with antibiotics after 14 days of symptoms. While it is true that most sinus infections, even those that are bacterial in origin, will resolve after 14 days with or without treatment, characteristics such as a long duration, worsening illness, and new fever indicate the need for antibiotics.

Nasal rinses may be of some benefit to patients, but evidence is mixed. Fluticasone is recommended as adjunctive treatment in acute sinusitis to facilitate drainage of the sinuses, but this patient's clinical signs and symptoms warrant an appropriate antibiotic.

Levofloxacin is an appropriate choice for patients who are allergic to penicillin or who have recurrent bacterial sinus infections. However, treatment for a long duration is appropriate only in the setting of recurrent infection or treatment failure, and after consultation with an otolaryngologist.

Ref: Chow AW, Benninger MS, Brook I, et al: IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. *Clin Infect Dis* 2012;54(8):e72-e112. 2) Antibiotic prescribing and use: Adult outpatient treatment recommendations. Centers for Disease Control and Prevention, 2017.

Item 102

ANSWER: A

This patient has osteomyelitis until proven otherwise. A radiograph of his right foot is the best initial test to look for evidence of this diagnosis. In most treatment settings, radiography is much easier to obtain than ultrasonography, CT, MRI, or technetium 99m bone scintigraphy. In addition, it is generally considerably less expensive than the other options listed. A radiograph also allows the physician to rule out other bony pathologies. MRI is useful if the radiograph is inconclusive, and is more helpful than radiography for determining bony versus soft-tissue infection. CT may be used in cases where MRI is contraindicated. Ultrasonography is not useful for evaluating bony lesions. Bone scintigraphy has low sensitivity, particularly in the setting of recent trauma or surgery.

Ref: Bury DC, Rogers TS, Dickman MM: Osteomyelitis: Diagnosis and treatment. *Am Fam Physician* 2021;104(4):395-402. 2) Matheson EM, Bragg SW, Blackwelder RS: Diabetes-related foot infections: Diagnosis and treatment. *Am Fam Physician* 2021;104(4):386-394.

Item 103

ANSWER: E

The majority of patients with systemic lupus erythematosus (SLE) follow a relapsing-remitting course, and management requires monitoring clinical symptoms and laboratory studies. Prolonged remission and persistently active disease are both infrequent. In addition to monitoring anti–double-stranded DNA, complement levels, erythrocyte sedimentation rates, C-reactive protein levels, WBC counts, platelet counts, serum creatinine levels, and glomerular filtration rates, monitoring urine studies for proteinuria is important to assess disease activity over time. Lupus nephritis is a significant cause of morbidity and mortality associated with SLE. Anti-cyclic citrullinated peptide and creatine kinase levels are associated with rheumatoid arthritis and polymyositis, respectively. These tests may assist in ruling out other autoimmune diseases but are not helpful once a diagnosis of SLE is made. While an antinuclear antibody (ANA) titer is helpful in making a diagnosis of SLE, it does not assist with assessing disease activity over time and should not be checked once it is known to be positive. Monitoring lipid levels and atherosclerotic cardiovascular risk is important in managing SLE, but lipid levels do not correlate with flares of SLE.

Ref: Volochayev R, Csako G, Wesley R, et al: Laboratory test abnormalities are common in polymyositis and dermatomyositis and differ among clinical and demographic groups. *Open Rheumatol J* 2012;6:54-63. 2) American College of Rheumatology–Pediatric Rheumatology: Don't repeat a confirmed positive ANA in patients with established JIA or systemic lupus erythematosus (SLE). ABIM Foundation Choosing Wisely campaign, 2013. 3) Vu Lam NC, Ghetu MV, Bieniek ML: Systemic lupus erythematosus: Primary care approach to diagnosis and management. *Am Fam Physician* 2016;94(4):284-294. 4) Wasserman A: Rheumatoid arthritis: Common questions about diagnosis and management. *Am Fam Physician* 2018;97(7):455-462. 5) Fanouriakis A, Tziolos N, Bertsias G, Boumpas DT: Update on the diagnosis and management of systemic lupus erythematosus. *Ann Rheum Dis* 2021;80(1):14-25.

Item 104

ANSWER: D

Oral rehydration therapy is as effective as intravenous rehydration in preventing hospitalizations and return emergency department visits in children with mild to moderate dehydration from acute gastroenteritis. Rotavirus infection cannot be prevented by handwashing and hygiene alone, and infants should receive the rotavirus vaccine to reduce the risk of rotavirus infection and associated complications. The benefit of probiotics for treatment of acute gastroenteritis is not yet clear. The majority of acute gastroenteritis infections in children are caused by viruses, not bacteria. Ondansetron is the antiemetic of choice for children, as older antiemetics, including promethazine and metoclopramide, have higher rates of adverse reactions.

Ref: Hartman S, Brown E, Loomis E, Russell HA: Gastroenteritis in children. *Am Fam Physician* 2019;99(3):159-165.

Item 105

ANSWER: B

This patient presents with acute altered mental status. Delirium should always be considered in this setting because it is both common and frequently overlooked (SOR C). There are multiple potential causes of this patient's acute altered mental status, including but not limited to systemic infections, metabolic disturbances, medications, systemic conditions, and central nervous system insults such as ischemic stroke. The clinical examination does not indicate the focal neurologic changes of a stroke, and this patient's TIA was several years ago with no subsequent chronic cognitive changes.

The history and examination in this case do not suggest the presence of chronic cognitive changes indicative of conditions such as Alzheimer's disease, mild neurocognitive disorder, or vascular dementia. Alzheimer's disease has an insidious and gradual onset of cognitive symptoms. In vascular dementia, the symptoms begin after cerebrovascular events. Importantly, in the setting of acute mental status changes, the Choosing Wisely campaign recommends not presuming a diagnosis of dementia in an older adult with acute symptoms of confusion without first assessing for delirium.

Ref: Falk N, Cole A, Meredith TJ: Evaluation of suspected dementia. *Am Fam Physician* 2018;97(6):398-405. 2) Veauthier B, Hornecker JR, Thrasher T: Recent-onset altered mental status: Evaluation and management. *Am Fam Physician* 2021;104(5):461-470.

Item 106

ANSWER: D

The CDC's Advisory Committee on Immunization Practices updated its recommendations in 2022 to include a two-dose series of recombinant zoster vaccine for all adults age 19 and older with HIV. Vaccination against meningococcal bacteria A, C, W, and Y (MenACWY) is also recommended, and meningococcal B (MenB) vaccination is only recommended based on the presence of other risk factors, including asplenia, complement deficiency, treatment with complement inhibitors, or risk due to outbreaks. Prophylactic emtricitabine/tenofovir is approved for pre- and postexposure prophylaxis of HIV, but would not be used alone in the care of patients with established HIV. *Pneumocystis jirovecii* prophylaxis, most commonly with sulfamethoxazole/trimethoprim, is recommended in patients with CD4 lymphocyte counts <200 cells/μL. Hepatitis B vaccine is recommended but would not be necessary for patients such as this one with natural immunity or confirmed immunity from vaccination.

Ref: Immunization schedules: Adult immunization schedule: Recommendations for ages 19 years or older, United States, 2022. Centers for Disease Control and Prevention, reviewed 2022. 2) Spach DH (ed): National HIV Curriculum. University of Washington, 2022.

Item 107

ANSWER: E

Hypertriglyceridemia, defined as triglyceride levels ≥500 mg/dL, increases the risk of pancreatitis. It does not increase the risk of asthma, chronic kidney disease, gallstones, or hypothyroidism. Patients with hypertriglyceridemia should initiate therapeutic lifestyle modifications and should be treated with fibrates or niacin to help reduce the risk of pancreatitis.

Ref: Oh RC, Trivette ET, Westerfield KL: Management of hypertriglyceridemia: Common questions and answers. *Am Fam Physician* 2020;102(6):347-354.

Item 108

ANSWER: D

For children up to 4 years of age who only have wheezing with respiratory infections, using an inhaled corticosteroid (IC) daily when a respiratory infection develops reduces exacerbations and the use of systemic corticosteroid therapy. It is uncertain if ICs affect growth, but they would be less likely to do so than systemic corticosteroids. Antibiotic therapy should be reserved for bacterial infections. Montelukast is indicated for the prevention of asthma and allergic rhinitis. The use of antihistamine decongestant preparations in children is not recommended due to potential side effects and minimal benefit.

Ref: Raymond TJ, Bennett NF, Rodionova MI: Asthma management: Updated guidelines from the National Heart, Lung, and Blood Institute. *Am Fam Physician* 2021;104(5):531-532.

Item 109

ANSWER: A

This patient has a nondisplaced radial head fracture. Current evidence supports a brief period of immobilization followed by early range-of-motion exercises to avoid decreased range of motion. This results in good outcomes in 85%–95% of patients. Immobilization for 6 weeks using either a long arm posterior splint or a long arm cast is not necessary. More advanced or displaced fractures may require a referral to an orthopedist for cast placement or operative repair, but nondisplaced radial head fractures can be managed by primary care physicians.

Ref: Paschos NK, Mitsionis GI, Vasiliadis HS, Georgoulis AD: Comparison of early mobilization protocols in radial head fractures. *J Orthop Trauma* 2013;27(3):134-139. 2) Patel DS, Statuta SM, Ahmed N: Common fractures of the radius and ulna. *Am Fam Physician* 2021;103(6):345-354.

Item 110

ANSWER: C

This patient has an acute febrile illness and meets criteria for systemic inflammatory response syndrome (SIRS) and decompensated shock. Shock is a medical emergency requiring urgent treatment to prevent death or other complications. The four types of shock are differentiated based on clinical signs. Correct treatment hinges on accurate determination of the type of shock. This patient demonstrates high-output shock typical of septic shock. Initial treatment of septic shock begins with fluid resuscitation using isotonic crystalloid by an intravenous or intraosseous route. Recent guidelines recommend a minimum of 30 mL/kg of isotonic crystalloid, with a preference for lactated Ringer's solution over normal saline. Hypotonic solutions, such as half-normal saline, should never be administered as a bolus. There is no indication for epinephrine or dobutamine in this patient. Norepinephrine can be indicated for septic shock that has not responded to fluid resuscitation.

Ref: Gauer R, Forbes D, Boyer N: Sepsis: Diagnosis and management. *Am Fam Physician* 2020;101(7):409-418. 2) Evans L, Rhodes A, Alhazzani W, et al: Executive Summary: Surviving Sepsis Campaign: International guidelines for the management of sepsis and septic shock 2021. *Crit Care Med* 2021;49(11):1974-1982.

Item 111

ANSWER: A

This patient has a hordeolum (stye). Typical first-line treatment is to apply warm compresses and perform gentle massage of the area to promote drainage of the occluded gland. Antibiotics and incision and drainage are not necessary unless surrounding cellulitis is present or there is failure to improve with initial therapy.

Ref: Carlisle RT, Digiovanni J: Differential diagnosis of the swollen red eyelid. *Am Fam Physician* 2015;92(2):106-112.

Item 112

ANSWER: A

Mastalgia is a common symptom requiring evaluation in the primary care setting. Cyclic mastalgia accounts for about two-thirds of all breast pain and is thought to be caused by increased sensitivity of the breast tissues to hormonal stimulation during the luteal phase of the menstrual cycle. Topical NSAIDs such as diclofenac are the first-line pharmacologic treatment for mastalgia (SOR B). Danazol is the only drug that is approved by the FDA for treatment of mastalgia, but it is poorly tolerated due to menorrhagia, muscle cramps, weight gain, and other androgenic effects. Goserelin is only indicated for severe, refractory mastalgia. Tamoxifen is more effective and better tolerated than danazol, but is associated with hot flashes, vaginal discharge, venous thromboembolism, endometrial cancer, and teratogenicity.

Ref: Salzman B, Collins E, Hersh L: Common breast problems. *Am Fam Physician* 2019;99(8):505-514.

Item 113

ANSWER: A

Complex regional pain syndrome (CRPS) usually develops after an injury, often a fracture, to a distal extremity, although it can present without prior injury. The diagnosis is made clinically using the history and physical examination. Its pathophysiology is poorly understood. Ultrasonography or MRI may be used to rule out other diagnoses but are not necessary for the diagnosis of CRPS. Nerve injury can be seen on nerve conduction testing with type 2 CRPS, also known as causalgia, but nerve injury is not always identified with type 1 CRPS, also known as reflex sympathetic dystrophy. Nerve conduction testing is not necessary for making the diagnosis, and both types of CRPS are treated with the same approach. A technetium 99m bone scan may reveal increased bone resorption at the site, but it is neither sensitive nor specific for CRPS.

Ref: Lloyd ECO, Dempsey B, Romero L: Complex regional pain syndrome. *Am Fam Physician* 2021;104(1):49-55.

Item 114

ANSWER: B

Patients with end-stage renal disease and diabetes mellitus need careful monitoring of glucose because insulin requirements are difficult to predict and there is an increased risk of hypoglycemia in this setting. The optimal hemoglobin A_{1c} has not been established but maintaining a value between 6% and 9% does decrease mortality. With close monitoring, insulin is preferred for most individuals. Sulfonylureas such as glimepiride and glyburide are associated with a high risk of hypoglycemia and should be avoided in these patients. Metformin should be avoided in those with a glomerular filtration rate <30 mL/min/1.73 m^2. Pioglitazone should also be avoided in chronic kidney disease due to the risk of fluid retention and precipitating heart failure.

Ref: Wouk N: End-stage renal disease: Medical management. *Am Fam Physician* 2021;104(5):493-499.

Item 115

ANSWER: D

Employing a presumptive approach rather than a participatory approach significantly increases the likelihood that a patient, parent, or guardian will accept a recommended vaccine. This strategy implies that accepting the immunization is the usual or normal choice. The correct option in this scenario presumes the patient will accept the immunization, while the remainder of the options ask if they will.

Ref: Loehr J, Savoy M: Strategies for addressing and overcoming vaccine hesitancy. *Am Fam Physician* 2016;94(2):94-96. 2) Luther JS: Improving shingles vaccination rates in family medicine. *J Fam Pract* 2021;70(6S):S13-S18.

Item 116

ANSWER: C

The combination of a high globulin-to-albumin ratio, anemia, renal insufficiency, and hypercalcemia in a patient with diffuse musculoskeletal pain is highly suggestive of multiple myeloma. Serum and urine immunoelectrophoresis would be the next test to order. Carcinoma of the prostate metastatic to bone should be seen on a bone scan and the PSA level would be much higher. Hyperparathyroidism is part of the differential diagnosis, but a low phosphorus level would be expected. An elevated alkaline phosphatase level would be expected in osteomalacia. Polymyalgia rheumatica is more common in women and would not be associated with elevated calcium and globulins and this degree of anemia.

Ref: Michels TC, Petersen KE: Multiple myeloma: Diagnosis and treatment. *Am Fam Physician* 2017;95(6):373-383.

Item 117

ANSWER: D

This chest radiograph is consistent with a large right pneumothorax and complete lung collapse. In addition, there is a leftward mediastinal shift that raises the concern for a tension pneumothorax. The chest radiograph is not consistent with aspiration pneumonia or community-acquired pneumonia. While a non–ST-elevation myocardial infarction or pulmonary embolus could have a similar presentation, this abnormal chest radiograph points to pneumothorax as the most likely diagnosis.

Ref: Walls RM, Hockberger RS, Gausche-Hill M, et al (eds): *Rosen's Emergency Medicine: Concepts and Clinical Practice*, ed 9. Elsevier, 2018, pp 881-885. 2) DeMaio A, Semaan R: Management of pneumothorax. *Clin Chest Med* 2021;42(4):729-738.

Item 118

ANSWER: D

A recent review from the Agency for Healthcare Research and Quality (AHRQ) found the frequency of adverse events in older adults taking SSRIs such as sertraline and escitalopram was similar to placebo (SOR B). SSRIs also have lower discontinuation rates than tricyclic antidepressants such as amitriptyline or nortriptyline during treatment of up to 12 weeks (SOR B).

Evidence suggests that SNRIs including duloxetine and venlafaxine cause more adverse events and greater discontinuation of therapy during treatment of up to 12 weeks when compared to placebo (SOR B). A randomized, controlled trial involving duloxetine demonstrated an increased risk of treatment withdrawal due to adverse events and an increased risk of falls over 12–24 weeks.

Venlafaxine was compared to no antidepressant use in a large cohort study that had a median treatment period of 364 days and was associated with an increased risk of falls, fractures, and mortality.

Ref: Sobieraj DM, Baker WL, Martinez BK, et al: Adverse effects of pharmacologic treatments of major depression in older adults. Agency for Healthcare Research and Quality, 2019. 2) Salisbury-Afshar E: Adverse events of pharmacologic treatments of major depression in older adults. *Am Fam Physician* 2020;101(3):179-181.

Item 119

ANSWER: A

This patient has confirmed peripheral artery disease (PAD) with an abnormal ankle-brachial index. Guideline-directed therapy for PAD includes low-dose aspirin, moderate- to high-intensity statin therapy, an ACE inhibitor or angiotensin receptor blocker, a structured exercise program, and smoking cessation. Apixaban is a novel oral anticoagulant that is used for stroke prevention in nonvalvular atrial fibrillation as well as treatment of deep vein thrombosis and pulmonary embolism. Apixaban is not used for the treatment of PAD.

Ref: Firnhaber JM, Powell CS: Arterial atherosclerosis: Vascular surgery interventions. *Am Fam Physician* 2022;105(1):65-72.

Item 120

ANSWER: E

Vaccine delay and vaccine hesitancy are on the rise in the United States, so family physicians should be familiar with the nuances of vaccine catch-up schedules as well as contraindications. Rotavirus vaccine has age restrictions and should not be initiated after 14 weeks and 6 days of age. In addition, the rotavirus series must be complete by 8 months of age. These age restrictions are intended to ensure the vaccine is administered when it will be of maximal benefit to children given the slightly increased risk of intussusception after vaccine administration. Hepatitis B vaccine should be administered at routine intervals. *Haemophilus influenzae* type b, inactivated poliovirus, and pneumococcal conjugate can all be administered to this patient today. However, these vaccines have complex follow-up intervals based on the age at prior doses and age at catch-up. Therefore, the clinician should consult the CDC catch-up vaccine schedule to verify dosing intervals.

Ref: Weintraub ES, Baggs J, Duffy J, et al: Risk of intussusception after monovalent rotavirus vaccination. *N Engl J Med* 2014;370(6):513-519. 2) Spencer JP, Trondsen Pawlowski RH, Thomas S: Vaccine adverse events: Separating myth from reality. *Am Fam Physician* 2017;95(12):786-794. 3) Immunization schedules: Catch-up immunization schedule. Centers for Disease Control and Prevention, reviewed 2021.

Item 121

ANSWER: B

Neonatal early-onset sepsis (EOS) has an incidence of 0.5 per 1000 live births according to the CDC, and group B *Streptococcus* (GBS) remains the most common cause. Risk factors for neonatal EOS include maternal GBS, prolonged rupture of membranes, intrauterine inflammation or infection, and the combination of inflammation and infection, commonly known as maternal chorioamnionitis, or triple I. Updated guidelines from the American Academy of Pediatrics (AAP) and the American College of Obstetricians and Gynecologists replaced traditional guidelines on prevention of neonatal EOS from the CDC.

Current guidelines recommend either categorical risk factor assessment, use of the neonatal EOS calculator, or enhanced observation. However, categorical risk factor assessment, similar to 2002 and 2010 CDC guidelines, would result in blood cultures and administration of antibiotics to any newborn where there was a maternal intrapartum fever.

The other two approaches, particularly use of the neonatal EOS calculator, have been demonstrated to decrease antibiotic administration. This calculator uses a multivariate approach to determining neonatal EOS risk, combining information from both the delivery and postpartum assessment of the newborn. Enhanced observation utilizes frequent clinical assessment and is thought to similarly reduce antibiotic administration. The AAP guidelines suggest C-reactive protein levels and CBCs have poor predictive value in identifying neonatal EOS and should not be used to guide management. Blood cultures are frequently obtained with co-administration of antibiotics and there is no data to suggest that blood cultures alone would reduce antibiotic administration.

Ref: Achten NB, Klingenberg C, Benitz WE, et al: Association of use of the neonatal early-onset sepsis calculator with reduction in antibiotic therapy and safety: A systematic review and meta-analysis. *JAMA Pediatr* 2019;173(11):1032-1040. 2) Puopolo KM, Lynfield R, Cummings JJ, et al: Management of infants at risk for group B streptococcal disease. *Pediatrics* 2019;144(2):e20191881. 3) Deshmukh M, Mehta S, Patole S: Sepsis calculator for neonatal early onset sepsis – A systematic review and meta-analysis. *J Matern Fetal Neonatal Med* 2021;34(11):1832-1840.

Item 122

ANSWER: D

This patient has shoulder impingement syndrome (with a positive Hawkins impingement sign) and evidence of supraspinatus tendinopathy (with a positive empty-can rotator cuff test). However, the negative drop-arm rotator cuff test is evidence against a complete rotator cuff tear with a negative drop-arm rotator cuff test, and the absence of night pain supports this. Physical therapy, along with pain control using NSAIDs, acetaminophen, or short-term opiate medication, would be most appropriate as initial therapy. Complete shoulder rest is inappropriate since his daily activities are not aggravating the problem, and cessation of play is not necessary since other treatment options are available. A subacromial corticosteroid injection, while commonly done and likely to provide short-term pain relief, is unlikely to provide long-term improvement in pain and function. Surgery is a potential option if other treatments fail and a significant tear is proven, but is not preferable as an initial treatment.

Ref: Burbank KM, Stevenson JH, Czarnecki GR, Dorfman J: Chronic shoulder pain: Part I. Evaluation and diagnosis. *Am Fam Physician* 2008;77(4):453-460. 2) Burbank KM, Stevenson JH, Czarnecki GR, Dorfman J: Chronic shoulder pain: Part II. Treatment. *Am Fam Physician* 2008;77(4):493-497. 3) Edmonds EW, Dengerink DD: Common conditions in the overhead athlete. *Am Fam Physician* 2014;89(7):537-541.

Item 123

ANSWER: E

For primary preventive interventions for the management of lipids, the 10-year atherosclerotic cardiovascular disease risk estimate is useful as a starting point for shared decision-making with patients. Specifically, it is a helpful tool when deciding on the use and intensity of statin therapy. The coronary artery calcium score can refine the risk assessment even further for those at intermediate predicted risk ($\geq$7.5% to $<$20%) or borderline predicted risk (5% to $<$7.5%).

For those at intermediate or borderline risk with a coronary artery calcium score of 0, it would not be reasonable to start a statin. If the coronary artery calcium score is 100 or greater, starting a statin is acceptable in patients ≥55 years of age.

Ref: Arnett DK, Blumenthal RS, Albert MA, et al: 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation* 2019;140(11):e596-e646.

Item 124

ANSWER: D

A chest radiograph is appropriate in the initial evaluation of hemoptysis (SOR C). If the chest radiograph does not indicate a cause, then CT or CT angiography with intravenous contrast should be performed (SOR C). CT has become the preferred modality over bronchoscopy because it is more effective in determining the etiology. If CT does not identify the cause, bronchoscopy would be the next step. In addition, other tests including a sputum Gram stain, acid-fast bacillus smear, or sputum cytology can be useful depending upon the clinical situation.

If there are concerns about the possibility of immunologic, rheumatologic, or vasculitic disease, testing for immunologic antibodies such as antineutrophil cytoplasmic antibody (ANCA) can be ordered.

Ref: O'Gurek D, Choi HYJ: Hemoptysis: Evaluation and management. *Am Fam Physician* 2022;105(2):144-151.

Item 125

ANSWER: D

Simplifying medication regimens, including using combination medications to decrease the number of pills a patient must take, has been shown to improve medication adherence in clinical trials (SOR B). Taking antihypertensive medications before bed has not been shown to improve adherence. Prescribing brand name medications increases costs, which may decrease adherence. Unless specific side effects are a concern, changing medications or adding another agent would not be likely to improve adherence.

Ref: Kini V, Ho PM: Interventions to improve medication adherence: A review. *JAMA* 2018;320(23):2461-2473.

Item 126

ANSWER: A

The American Diabetes Association and the Kidney Disease: Improving Global Outcomes group recommend combination treatment with metformin and an SGLT2 inhibitor for patients with type 2 diabetes and chronic kidney disease (CKD) with an estimated glomerular filtration rate >30 mL/min/1.73 m^2. Metformin is first-line medical therapy for the majority of patients with type 2 diabetes. The addition of an SGLT2 inhibitor limits the progression of kidney disease and improves cardiac outcomes (SOR A). They should be considered first-line treatment along with metformin regardless of the baseline or target hemoglobin A_{1c}.

Sulfonylureas and thiazolidinediones would not be used as first-line therapy in this scenario. Their use is now recommended secondarily only when cost is a major issue. Insulin is not indicated in this patient as oral hypoglycemics are first-line therapy unless the hemoglobin A_{1c} is $>10\%$ or the patient is experiencing persistent symptoms of hyperglycemia. DPP-4 inhibitors such as sitagliptin are second-line therapy to help patients reach glycemic targets. They are not used as first-line treatment with metformin or as monotherapy. The significant weight loss benefits of GLP-1 receptor agonists and SGLT2 inhibitors make them preferred choices.

Ref: Khunti K, de Boer IH, Rossing P: Chronic kidney disease in diabetes: Guidelines from KDIGO. *Am Fam Physician* 2021;103(11):698-700. 2) American Diabetes Association: *Standards of Medical Care in Diabetes-2021* Abridged for primary care providers. *Clin Diabetes* 2021;39(1):14-43.

Item 127

ANSWER: D

This patient presents with symptoms suggestive of vaginitis, which can be caused by vaginal infections, atrophy, and irritation from pads, panty liners, soaps, and perfumes. Atrophic vaginitis due to lack of estrogen is common in postmenopausal females. The condition responds to estrogen therapy, but infectious causes must first be ruled out. The presence of motile flagellates confirms the diagnosis of *Trichomonas* vaginitis, which would be treated with oral metronidazole, either as a one-time 2-g dose or 500 mg twice daily for 7 days. Estradiol, fluconazole, doxycycline, and sulfamethoxazole/trimethoprim are not used for the treatment of *Trichomonas*.

Ref: Paladine HL, Desai UA: Vaginitis: Diagnosis and treatment. *Am Fam Physician* 2018;97(5):321-329.

Item 128

ANSWER: C

Surgical treatment for obesity results in remission of diabetes mellitus in 60%–80% of patients at 2 years and sustained remission in 30% at 15 years after a Roux-en-Y procedure. Postsurgical dietary recommendations include consuming protein first at each meal, rather than carbohydrates, to prevent malnutrition, and separating consumption of liquids from solids by 15–30 minutes to avoid food passing through the stomach too quickly, which can lead to a decreased sensation of satiety. Patients who are treated surgically for obesity rather than with nonsurgical interventions have a longer overall length of survival. All-cause mortality is decreased by 30%–50% at 7–15 years after surgery. Evaluation for nutritional deficiencies should be performed quarterly for the first year after surgery; after that, annual checks are recommended.

Ref: Schroeder R, Harrison TD, McGraw SL: Treatment of adult obesity with bariatric surgery. *Am Fam Physician* 2016;93(1):31-37.

Item 129

ANSWER: B

In somatic symptom disorder, the primary feature is the patient's concern with physical symptoms that have manifested through psychological or emotional distress and have no other medical explanation. The family physician should offer frequent, regularly scheduled visits for these patients.

The acronym CARE MD describes an approach to management of somatic symptom disorder:

- **C**onsultation with mental health professionals for cognitive behavioral therapy or mindfulness-based therapy (SOR B)
- **A**ssessment for other medical and psychiatric diseases
- **R**egular short-interval follow-up visits to stress coping rather than cure and to reduce the overuse of health care visits such as the emergency department
- **E**mpathy demonstrated by listening to the patient while acknowledging and legitimizing the patient's symptoms
- **M**edical-psychiatric interface emphasizing the mind-body connection
- **D**oing no harm by reassuring the patient while limiting diagnostic testing and referrals to subspecialists

Ref: Kurlansik SL, Maffei MS: Somatic symptom disorder. *Am Fam Physician* 2016;93(1):49-54.

Item 130

ANSWER: E

When testosterone therapy is started, baseline and periodic measurements of PSA and hematocrit should be performed. If the hematocrit increases to $>54\%$ the testosterone dosage should be stopped or decreased to avoid hemoconcentration. Liver and renal function tests should be monitored routinely with many drugs but not specifically with testosterone. The C-reactive protein level is not monitored during testosterone therapy.

Ref: Petering RC, Brooks NA: Testosterone therapy: Review of clinical applications. *Am Fam Physician* 2017;96(7):441-449.

Item 131

ANSWER: E

Trigger finger, which can be associated with diabetes mellitus, presents with locking, clicking, or popping at the base of the finger or thumb. The finger may lock when flexed. Treatment consists of corticosteroid injection or splinting, and surgery may be necessary. Calcific peritendinitis causes pain, tenderness, and edema. Dupuytren contracture is manifested as a palpable cord in the palm and is not associated with locking. Flexor tenosynovitis causes fusiform digit swelling and is associated with rheumatoid arthritis. Rheumatoid arthritis involves multiple joints.

Ref: Johnson E, Stelzer J, Romero AB, Werntz JR: Recognizing and treating trigger finger. *J Fam Pract* 2021;70(7):334-340.

Item 132

ANSWER: E

Sinus node dysfunction, also known as sick sinus syndrome, is defined by an abnormal initiation and propagation of electrical impulses from the sinoatrial node, causing sinus pauses of more than 3 seconds, sinus arrest, and bradycardia (heart rate < 50 beats/min). Due to the resulting hypoperfusion, patients may experience decreased tolerance of physical activity, palpitations, dizziness, easy fatigability, and syncope. The diagnosis is made using heart rate monitoring. If symptoms are associated with exertion, an exercise stress test should be performed. Patients not reaching a heart rate of at least 80% of their predicted maximum (220 beats/min minus age) may have chronotropic incompetence. If the diagnosis of sinus node dysfunction is confirmed, the first-line treatment is placement of a permanent pacemaker.

Medication control of sinus node dysfunction, such as with cilostazol, is an option for patients unwilling to receive a permanent pacemaker, which is not the case in this patient. Atropine, dopamine, and glucagon are used in advanced cardiac life support protocols for patients who are acutely unstable. These medications are not appropriate for long-term management.

Ref: Hawks MK, Paul MLB, Malu OO: Sinus node dysfunction. *Am Fam Physician* 2021;104(2):179-185.

Item 133

ANSWER: C

For a physician to be found guilty of medical malpractice in the United States, the plaintiff must show that the physician acted negligently in providing care and that the negligence resulted in injury. Determining this requires proof of the following four legal components: (1) a professional duty owed to the patient; (2) a breach of said duty; (3) an injury caused by the breach; and (4) resulting damages. Although physicians are legally required to disclose conflicts of interest, having a conflict of interest is not an essential element in a malpractice decision. Malpractice may occur even if the patient is not rendered a financial charge, provided that the four essential criteria are met. Medical malpractice cases that are not settled or otherwise dismissed proceed to a jury trial, not to a grand jury. Grand juries are part of the criminal indictment process and are not relevant to medical malpractice cases. While expert witness testimony is often used in a malpractice case, typically to help establish whether there has been a breach of a professional standard of care, such testimony is not a requirement for a medical malpractice decision.

Ref: Bal BS: An introduction to medical malpractice in the United States. *Clin Orthop Relat Res* 2009;467(2):339-347. 2) Kass JS, Rose RV: Medical malpractice reform—Historical approaches, alternative models, and communication and resolution programs. *AMA J Ethics* 2016;18(3):299-310.

Item 134

ANSWER: A

Acute bronchitis is caused by a viral infection in 90%–99% of cases. Atypical organisms such as *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* are rare causes and have been found in less than 1% of cases of acute bronchitis.

Ref: Kinkade S, Long NA: Acute bronchitis. *Am Fam Physician* 2016;94(7):560-565.

Item 135

ANSWER: E

This patient is at risk for hepatitis C virus (HCV) infection due to his history of intravenous drug use. The initial screening test for HCV is anti-HCV antibody testing, and a positive result could indicate either a prior infection that cleared or an active infection. If the antibody test is positive, HCV RNA polymerase chain reaction testing is the next step to confirm an active infection. AST and ALT levels and a CBC should be obtained if the patient is diagnosed with an active HCV infection. The AST/platelet ratio index is a screening test for hepatic fibrosis and cirrhosis.

Ref: Maness DL, Riley E, Studebaker G: Hepatitis C: Diagnosis and management. *Am Fam Physician* 2021;104(6):626-635.

Item 136

ANSWER: E

Corneal abrasions are a common cause of acute eye pain and are often evaluated in primary care settings. Small (≤4 mm), uncomplicated abrasions typically heal within 1–2 days and usually respond to oral analgesics such as acetaminophen or NSAIDs. A 2013 review reported effective pain relief and earlier return to work with use of topical NSAIDs, although a 2017 Cochrane review subsequently found that evidence may be lacking to support their use, especially considering the higher cost when compared to oral options.

Patching has been proven ineffective for pain relief and can delay healing, although ophthalmologists sometimes use patching to treat large abrasions or to provide a protective barrier for patients who may have difficulty avoiding rubbing their eyes, such as children or people with cognitive impairment. Patching of the unaffected eye is done to treat amblyopia but is not appropriate for managing corneal abrasions. Topical corticosteroids such as prednisolone are not appropriate for treatment of corneal abrasions due to increased susceptibility to infection and the risk of delayed healing and should only be used under the guidance of an ophthalmologist. While point-of-care use of topical anesthetics such as tetracaine may be considered, repeated administration is not recommended as continued use may cause damage to the corneal epithelium, delay healing, and mask symptoms. While topical antibiotics are often prescribed in the setting of corneal abrasion to prevent bacterial superinfection, evidence to support this practice in general is lacking. However, contact lens wearers are at increased risk of infection due to *Pseudomonas aeruginosa* and should be prescribed an antibiotic with antipseudomonal activity.

Ref: Wipperman JL, Dorsch JN: Evaluation and management of corneal abrasions. *Am Fam Physician* 2013;87(2):114-120. 2) Lim CHL, Turner A, Lim BX: Patching for corneal abrasion. *Cochrane Database Syst Rev* 2016;(7):CD004764. 3) Wakai A, Lawrenson JG, Lawrenson AL, et al: Topical non-steroidal anti-inflammatory drugs for analgesia in traumatic corneal abrasions. *Cochrane Database Syst Rev* 2017;(5):CD009781.

Item 137

ANSWER: D

More than 10% of U.S. adults have onychomycosis, and age over 60 is an important risk factor. Patients with suspected onychomycosis should undergo testing to confirm the infection, preferably with a KOH preparation. The American Academy of Dermatology's recommendations in the Choosing Wisely initiative support testing before treatment. The most efficacious therapy for onychomycosis of any severity is an oral antifungal. Terbinafine is the most effective oral antifungal and should be first-line therapy for most patients (SOR B). Oral fluconazole and itraconazole are also beneficial but exhibit lower cure rates than terbinafine. Oral antifungals are contraindicated in patients with chronic liver disease; transaminase levels should be checked before starting therapy.

Topical antifungals are appropriate for mild onychomycosis but are not as effective as the oral forms. Efinaconazole is the most effective of the topical antifungals but is quite expensive. Tea tree oil and other topical treatments such as Vicks VapoRub, oregano, and vitamin E have shown antifungal activity, but larger studies are needed to validate their effectiveness. Laser therapy for onychomycosis is approved by the FDA but there is a dearth of evidence as to its effectiveness.

Ref: Frazier WT, Santiago-Delgado ZM, Stupka KC 2nd: Onychomycosis: Rapid evidence review. *Am Fam Physician* 2021;104(4):359-367. 2) American Academy of Dermatology: Don't prescribe oral antifungal therapy for suspected nail fungus without confirmation of fungal infection. ABIM Foundation Choosing Wisely Campaign, 2021.

Item 138

ANSWER: B

A urine drug screen may be positive for cannabis for up to 24 hours after exposure to secondhand cannabis smoke in an enclosed space. The urine drug screen can be positive for 4–5 days after a single use of cannabis and for a month after cessation in someone who uses it daily.

Ref: Sazegar P: Cannabis essentials: Tools for clinical practice. *Am Fam Physician* 2021;104(6):598-608.

Item 139

ANSWER: C

While each of the listed medications has evidence of benefit for improving glycemic control, only the GLP-1 agonist liraglutide would be expected to cause weight loss. SGLT2 inhibitors are also associated with weight loss. Sulfonylureas such as glipizide, insulins such as glargine, and meglitinides such as nateglinide all increase the risk of weight gain. DPP-4 inhibitors such as sitagliptin are weight neutral.

Ref: Steinberg J, Carlson L: Type 2 diabetes therapies: A STEPS approach. *Am Fam Physician* 2019;99(4):237-243. 2) Kalyani RR: Glucose-lowering drugs to reduce cardiovascular risk in type 2 diabetes. *N Engl J Med* 2021;384(13):1248-1260.

Item 140

ANSWER: A

Hypertrophic cardiomyopathy (HCM), formerly known as idiopathic hypertrophic subaortic stenosis, is a common and underdiagnosed form of inherited heart disease with a prevalence of 1:500 in the United States and worldwide. HCM is associated with a systolic murmur at the lower left sternal border with an intensity that changes along with changes to preload of the heart. Lying down increases preload, which decreases the murmur. The Valsalva maneuver decreases preload and increases the murmur. Advanced HCM may cause heart failure and jugular venous distention, but at that stage symptoms would be expected. Elevated pulse pressures are classically seen with aortic insufficiency rather than HCM. Differential blood pressures in the arms would not be expected with HCM.

Ref: Brieler J, Breeden MA, Tucker J: Cardiomyopathy: An overview. *Am Fam Physician* 2017;96(10):640-646. 2) Maron BJ: Clinical course and management of hypertrophic cardiomyopathy. *N Engl J Med* 2018;379(7):655-668.

Item 141

ANSWER: A

This child presents with symptoms and signs consistent with community-acquired pneumonia. Since the child is well hydrated and in no distress, outpatient therapy with oral antibiotics is most appropriate. The preferred first-line antibiotic is amoxicillin. In patients older than 7 years of age, doxycycline is an alternative option when an atypical bacterial cause is presumed likely. Intramuscular ceftriaxone, withholding antibiotics until the diagnosis is confirmed with radiography, and hospitalization for intravenous antibiotics would not be appropriate in this case.

Ref: Smith DK, Kuckel DP, Recidoro AM: Community-acquired pneumonia in children: Rapid evidence review. *Am Fam Physician* 2021;104(6):618-625.

Item 142

ANSWER: D

Patients with rheumatoid arthritis being treated with anti-tumor necrosis factor therapy are at increased risk for septic arthritis. The most common cause of septic arthritis in adults is *Staphylococcus aureus*, followed by *Streptococcus* species. *Escherichia coli* causes about a fourth of the cases in the elderly. Fungal and mycobacterial causes such as *Candida albicans* or *Mycobacterium tuberculosis* are less common but must be considered in immunocompromised patients.

Ref: Earwood JS, Walker TR, Sue GJC: Septic arthritis: Diagnosis and treatment. *Am Fam Physician* 2021;104(6):589-597.

Item 143

ANSWER: E

This patient has entrapment of the ulnar nerve at the wrist level. This is more common in activities that place pressure on the volar aspect of the wrist, including weightlifting and cycling. Classic symptoms include paresthesia of the fourth and fifth fingers and hypothenar eminence, weakness in finger adduction and abduction, and weakness of the pincer mechanism. Axillary nerve entrapment can result from shoulder dislocations, humeral neck fracture, and pressure from crutch use, and can cause decreased sensation or pain over the lateral shoulder as well as weakness with shoulder external rotation, abduction, and extension. Median nerve entrapment results in paresthesia of the first three fingers and can result in thenar muscle atrophy. The radial nerve can be entrapped or compressed at many different locations, most commonly due to sustained pressure over the radial groove. This will result in paresthesia and pain in the posterior forearm and dorsal hand as well as weakness in wrist and finger extensors, which can result in wrist and finger drop. Suprascapular nerve entrapment can present similarly to axillary nerve entrapment, with shoulder pain and abduction and forward flexion deficits.

Ref: Silver S, Ledford CC, Vogel KJ, Arnold JJ: Peripheral nerve entrapment and injury in the upper extremity. *Am Fam Physician* 2021;103(5):275-285.

Item 144

ANSWER: E

This patient presents for a health maintenance examination in which evidence-based guidelines are used to promote health, screen for chronic disease, prevent complications of chronic disease, and recommend age-appropriate cancer screenings. Because both screening and not screening for prostate cancer with a prostate-specific antigen test are reasonable options, shared decision-making with the patient and consideration of his particular situation are necessary. For a male in his fifties, the U.S. Preventive Services Task Force (USPSTF) recommends hypertension screening with office blood pressure measurement, depression screening with the Patient Health Questionnaire–9, and cardiovascular disease screening with a lipoprotein profile. A whole-body skin examination for skin cancer screening is not recommended by the USPSTF due to insufficient evidence regarding the benefits versus the harms.

Ref: American Urological Association: Offer PSA screening for detecting prostate cancer only after engaging in shared decision making. ABIM Foundation Choosing Wisely campaign, 2015. 2) Heidelbaugh JJ: The adult well-male examination. *Am Fam Physician* 2018;98(12):729-737.

Item 145

ANSWER: C

This patient presents with symptomatic hyperglycemia in a catabolic state. In such cases insulin therapy is the most reliable way to control hyperglycemia and reverse catabolism. Oral metformin would not be adequate to control this degree of hyperglycemia and might not be tolerated well, given that the current symptoms include nausea and weight loss. Similarly, both empagliflozin, which increases glucosuria and volume contraction, and liraglutide, which decreases gastric emptying and is likely to exacerbate nausea, are likely to be poorly tolerated in this situation. While rapid and effective treatment is essential to prevent further complications, hospitalization is not necessary since the patient has no evidence of diabetic ketoacidosis.

Ref: American Diabetes Association Professional Practice Committee: 9. Pharmacologic approaches to glycemic treatment: *Standards of Medical Care in Diabetes—2022. Diabetes Care* 2022;45(Suppl 1):S125-S143.

Item 146

ANSWER: B

In order to make a diagnosis, personality disorders must meet specific criteria as outlined in the *DSM-5*. Other mental disorders, substance use or exposure, and medical conditions must also be excluded. This patient has avoidant personality disorder, which is characterized by social inhibition, fears of inadequacy, and hypersensitivity to criticism or rejection. It often presents in early adulthood. Persons with avoidant personality disorder may avoid new or unfamiliar situations, such as this patient who is unwilling to seek a new job. Persons with antisocial personality disorder exhibit a lack of respect for the rights of others, as well as deceitfulness, aggressiveness, and recklessness. Psychopathy and sociopathy are alternate terms. Borderline personality disorder is marked by instability in interpersonal relationships and self-image, impulsivity, reactivity of mood, and self-destructive behavior. Dependent personality disorder is described as an excessive need to be taken care of, intense fear of being alone, and extreme reliance on others for motivation and direction. Persons with histrionic personality disorder demonstrate excessive emotionality and attention-seeking behavior, often overestimating the closeness of interpersonal relationships and alienating others with hypersexual or hyperemotional reactions.

Ref: American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders*, ed 5. American Psychiatric Association, 2013.

Item 147

ANSWER: B

This patient most likely has plantar fasciitis. Stretching exercises are effective in reducing heel pain caused by plantar fasciitis. Clinical trials regarding pain relief with the use of night splints are conflicting and thus inconclusive. The American College of Foot and Ankle Surgeons does not advocate for or against acupuncture to treat plantar fasciitis, as the studies available are of low quality. Extracorporeal shock wave therapy is only recommended after conservative therapies fail and for chronic plantar fasciitis. Platelet-rich plasma injections may be indicated in refractory plantar fasciitis but are not considered first-line therapy for an acute presentation.

Ref: Trojian T, Tucker AK: Plantar fasciitis. *Am Fam Physician* 2019;99(12):744-750. 2) Atkinson B, Holland W, Stigleman S, et al: Platelet-rich plasma vs. corticosteroids for refractory plantar fasciitis. *Am Fam Physician* 2021;103(5):307-308.

Item 148

ANSWER: A

With the increasing shortage of pediatric providers, especially in rural areas, family physicians need to be comfortable managing the care of premature infants. Palivizumab is recommended for all infants born before 29 weeks gestational age who are less than 1 year of age at the beginning of respiratory syncytial virus season, or for those born at less than 32 weeks gestational age who develop chronic lung disease of prematurity. After 1 year of age, palivizumab is only recommended for infants with chronic lung disease of prematurity who continue to require medical intervention for their lung disease. Therefore, this child should not receive palivizumab.

Ref: American Academy of Pediatrics Committee on Infectious Diseases; American Academy of Pediatrics Bronchiolitis Guidelines Committee: Updated guidance for palivizumab prophylaxis among infants and young children at increased risk of hospitalization for respiratory syncytial virus infection. *Pediatrics* 2014;134(2):415-420. 2) Smith DK, Seales S, Budzik C: Respiratory syncytial virus bronchiolitis in children. *Am Fam Physician* 2017;95(2):94-99.

Item 149

ANSWER: A

The traditional approach to outpatient management of acute diverticulitis consists of clinical diagnosis (with or without imaging), antibiotics, and bowel rest. Two cohort studies found no difference in the effectiveness of outpatient treatment of diverticulitis with amoxicillin/clavulanate or with metronidazole plus a fluoroquinolone. Azithromycin is more appropriate for *Campylobacter* or *Escherichia coli* infections that cause lower gastrointestinal bleeding. Cephalexin is not an appropriate treatment, and ciprofloxacin monotherapy will not provide adequate coverage. Doxycycline is a treatment for watery diarrhea caused by *Vibrio cholerae* and *Yersinia* infections.

Ref: Wilkins T, Embry K, George R: Diagnosis and management of acute diverticulitis. *Am Fam Physician* 2013;87(9):612-620. 2) Barr W, Smith A: Acute diarrhea in adults. *Am Fam Physician* 2014;89(3):180-189. 3) DuBose J, Seehusen DA: Diagnosis and initial management of acute colonic diverticulitis. *Am Fam Physician* 2021;104(2):195-197.

Item 150

ANSWER: D

Patients found to have a PVC burden >10% are at risk for PVC-induced dilated cardiomyopathy (PVC-CM). In fact, a PVC burden of 16% has a sensitivity of almost 80% for PVC-CM. Echocardiography should be performed in patients with a PVC burden >10%. Treatment with anti-arrhythmic drugs or radiofrequency ablation reverses cardiomyopathy and its associated increase in morbidity, mortality, and health care spending. Further evaluation for ischemic heart disease may be performed if the patient has risk factors for ischemia. Symptomatic palpitations may be treated with β-blockers or calcium channel blockers, even in patients with lower PVC burdens and no cardiomyopathy. Left heart catheterization would not be appropriate.

Ref: Huizar JF, Ellenbogen KA, Tan AY, Kaszala K: Arrhythmia-induced cardiomyopathy: JACC state-of-the art review. *J Am Coll of Cardiol* 2019;73(18):2328-2344. 2) Narducci D, Patil S, Zeitler M, Mounsey A: Is an underlying cardiac condition causing your patient's palpitations? *J Fam Pract* 2021;70(2):60-68.

Item 151

ANSWER: D

This patient has the female athlete triad, a syndrome characterized by low energy availability relative to needs, disordered menses (delayed menarche, oligomenorrhea, or secondary amenorrhea), and decreased bone mineral density. This patient exhibits at least two components of the triad, although only one is required for diagnosis. Low energy availability relative to needs can be related to an eating disorder or to exercising beyond caloric supply. This leads to functional hypothalamic amenorrhea, which results in low circulating estrogen levels and then reduced bone mineral density. Anemia would be secondary to the low energy availability rather than the cause of this spectrum of issues. This patient does not have a history consistent with anorexia nervosa. Vitamin D deficiency would not cause the menstrual irregularities she has noted.

Ref: Mehta J, Thompson B, Kling JM: The female athlete triad: It takes a team. *Cleve Clin J Med* 2018;85(4):313-320.

Item 152

ANSWER: B

Breastfeeding provides many health benefits to both the mother and the infant. Maternal benefits include a decreased risk of developing cardiometabolic disease, including diabetes mellitus, hypertension, and cardiovascular disease; a decreased risk of breast cancer and ovarian cancer; and a decreased risk of postpartum depression. A link has not been established between breastfeeding and a reduced risk of developing colon cancer or lung cancer or osteoarthritis later in life. While breastfeeding may reduce the infant's risk of respiratory disease, this is not an expected benefit for the mother.

Ref: Westerfield KL, Koenig K, Oh R: Breastfeeding: Common questions and answers. *Am Fam Physician* 2018;98(6):368-373. 2) Breastfeeding: Why it matters. Centers for Disease Control and Prevention, 2021.

Item 153

ANSWER: B

The American Medical Association Code of Medical Ethics offers helpful guidance for making difficult decisions, including triage and reassessment decisions, when health care resources are limited during crisis situations. Explaining triage decision policies and procedures and providing patients who are denied initial resources a process for appealing decisions is a recommended process and the most ethically sound option of those listed. It is also recommended to make triage decisions based on medical need rather than social worth, and to allocate limited resources first to prevent premature death and then to those with the greatest duration of benefit after recovery. When unable to distinguish need based on medical factors, a random process or lottery is recommended rather than a first-come, first-served process since patients with obstacles to care who cannot present first would be unfairly disadvantaged. Reassessment of whether continued treatment is likely to be beneficial should occur periodically. Providing palliative care when treatment has been withdrawn is a necessary ethical practice.

Ref: Committee on Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations; Institute of Medicine: *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*. National Academies Press, 2012. 2) Crisis standards of care: Guidance from the AMA Code of Medical Ethics. American Medical Association, 2020.

Item 154

ANSWER: B

This patient presents with lateral hip pain and symptoms of greater trochanteric pain syndrome, which can include bursitis as well as gluteus medius tendinopathy or tears. She exhibits a Trendelenburg gait, which indicates gluteus muscle weakness. Both femoroacetabular impingement and labral tears generally cause anterior hip pain. Femoroacetabular impingement is one of the most common causes of hip pain in young adults and is usually caused by a cam deformity and/or a pincer deformity of the hip joint. Labral tears are usually associated with a history of trauma or sports-related injury. Hamstring injuries and sacroiliac joint dysfunction generally cause posterior hip pain. Hamstring strains are also associated with a history of trauma, sports-related injury, or overuse.

Ref: Chamberlain R: Hip pain in adults: Evaluation and differential diagnosis. *Am Fam Physician* 2021;103(2):81-89.

Item 155

ANSWER: B

It is uncommon for people to experience severe reactions, including anaphylaxis, after influenza vaccination. This is true even for those with egg allergies, despite the fact that embryonic chicken eggs are used to grow most influenza vaccine viruses. Influenza vaccine is safe to administer regularly to those who have only had hives after exposure to eggs. If more serious allergic symptoms occur with egg exposure, such as respiratory distress or anaphylaxis, influenza vaccine should be administered in an inpatient or supervised outpatient setting. Premedication with diphenhydramine or prednisone is not recommended. Referral to an allergist for desensitization would not be recommended for this patient.

Ref: Uyeki TM: Influenza. *Ann Intern Med* 2021;174(11):ITC161-ITC176.

Item 156

ANSWER: A

The U.S. Preventive Services Task Force (USPSTF) recommends screening for hypertension with office blood pressure measurement in adults ≥18 years of age (A recommendation). Adults ≥40 years of age and those ≥18 years of age with risk factors should receive annual hypertension screening. Less frequent screening is recommended for adults 18–39 years of age without risk factors. The USPSTF found insufficient evidence to recommend an ankle-brachial index (I recommendation) or a coronary artery calcium score (I recommendation) for cardiovascular screening, even in patients with traditional risk factors such as male sex, older age, current smoking, and overweight/obesity status. Cardiovascular screening with an EKG is not recommended (D recommendation). The USPSTF did not find adequate evidence to suggest that adding a resting or exercise EKG helped guide treatment decisions to reduce cardiovascular events in asymptomatic adults. It identified some evidence that small to moderate harms may exist, such as unnecessary invasive procedures. The USPSTF recommends abdominal duplex ultrasonography (B recommendation) for men 65–75 years of age who have ever smoked, which is usually defined as 100 cigarettes or more in a lifetime. The only appropriate screening test for the patient in this scenario is blood pressure measurement.

Ref: *Final Recommendation Statement: Cardiovascular Disease Risk: Screening With Electrocardiography*. US Preventive Services Task Force, 2018. 2) *Final Recommendation Statement: Cardiovascular Disease: Risk Assessment With Nontraditional Risk Factors*. US Preventive Services Task Force, 2018. 3) *Final Recommendation Statement: Abdominal Aortic Aneurysm: Screening*. US Preventive Services Task Force, 2019. 4) *Final Recommendation Statement: Hypertension in Adults: Screening*. US Preventive Services Task Force, 2021.

Item 157

ANSWER: D

Patients who have been treated with neck irradiation for lymphoma require follow-up surveillance with carotid artery ultrasonography every 10 years. There is evidence that asymptomatic carotid artery disease is more common in patients who have been treated with radiation for Hodgkin's lymphoma compared to the general population.

The risk of thyroid cancer is increased by neck irradiation. Hypothyroidism is also a common complication from neck irradiation, and a TSH level should be measured annually for up to 5 years. For patients who have completed treatment for lymphoma, additional surveillance laboratory studies include a comprehensive metabolic panel, fasting glucose level, and CBC. Patients with a history of chest or axillary irradiation should receive annual mammography screening starting 8–10 years after treatment or at age 40, whichever comes first. Breast MRI may be appropriate for patients who received chest irradiation treatment between ages 10 and 30. Parathyroid hormone levels, swallow studies, and neck CT would not be appropriate for this patient as surveillance to monitor for complications from radiation.

Ref: King LJ, Hasnain SN, Webb JA, et al: Asymptomatic carotid arterial disease in young patients following neck radiation therapy for Hodgkin lymphoma. *Radiology* 1999;213(1):167-172. 2) Lewis WD, Lilly S, Jones KL: Lymphoma: Diagnosis and treatment. *Am Fam Physician* 2020;101(1):34-41.

Item 158

ANSWER: B

A semen analysis is the first step in the evaluation of male infertility. In males with oligozoospermia (especially if the sperm count is < 10 million/mL), the American Urological Association recommends an endocrine evaluation with an FSH level and early morning total testosterone levels. The results of that testing can dictate next steps. A CBC and a basic metabolic panel have no role in the evaluation of male infertility. Antisperm antibody testing is rarely recommended and should only be considered in consultation with a fertility specialist. Scrotal ultrasonography is not recommended in individuals with a normal physical examination and should only be performed in individuals with palpable varicoceles on physical examination. A testicular biopsy is not usually required to help differentiate between obstructive and nonobstructive azoospermia.

Ref: Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM guideline. American Urological Association and American Society for Reproductive Medicine, 2020. 2) Schlegel PN, Sigman M, Collura B, et al: Diagnosis and treatment of infertility in men: AUA/ASRM Guideline PART II. *J Urol* 2021;205(1):44-51.

Item 159

ANSWER: C

This child displays characteristics of oppositional defiant disorder (ODD). The *DSM-5* criteria for a diagnosis of ODD include frequently losing one's temper, being easily annoyed, antagonism toward authority figures, deliberately annoying others, placing blame on others, and being spiteful or vindictive. These symptoms must occur for at least 6 months, cause distress or negative impacts, and not occur exclusively with substance use or in the course of a psychotic, depressive, or bipolar disorder. Treatment of common comorbid mental health conditions can be associated with improvement in ODD, so it is important to evaluate for attention-deficit/hyperactivity disorder, depression, and anxiety disorders, as well as ODD.

Given the persistence of symptoms and maternal concern in this patient, reassurance alone would not be appropriate. Patients with ODD have a high risk of developing other mental health conditions later, and early therapy is recommended. While positive reinforcement is an important parenting strategy for children with ODD, it would not be expected to be effective in isolation. Medication is rarely indicated for ODD, and not as monotherapy. Parent management therapy is an important part of ODD treatment, but therapy should generally include both child therapy and parent training.

Ref: Riley M, Ahmed S, Locke A: Common questions about oppositional defiant disorder. *Am Fam Physician* 2016;93(7):586-591.

Item 160

ANSWER: C

This patient has a classic presentation of croup, which peaks in the fall and winter months. There may not be any particular history of sick contacts and it does not present with a prodrome, in contrast to respiratory syncytial virus. The diagnosis of croup is purely clinical and does not require laboratory studies, viral cultures, or imaging (SOR C). The treatment of croup includes corticosteroids such as dexamethasone in mild cases (SOR A) and the addition of epinephrine in moderate to severe cases (SOR A). The inhalation of humidified air does not improve outcomes (SOR B) nor does nebulized albuterol.

Ref: Smith DK, McDermott AJ, Sullivan JF: Croup: Diagnosis and management. *Am Fam Physician* 2018;97(9):575-580.

Item 161

ANSWER: A

A MET is the amount of energy used by the body per minute of activity. Light intensity is <3 METs and includes activities such as sitting at a desk, light housework, casual walking, and stretching. Moderate intensity is 3.0–5.9 METs and includes brisk walking, water aerobics, and ballroom dancing. Vigorous intensity is ≥ 6 METs and is represented by activities such as high-intensity interval training, jogging, and heavy gardening.

Ref: Chodzko-Zajko WJ, Proctor DN, et al; American College of Sports Medicine: Exercise and physical activity for older adults. *Med Sci Sports Exerc* 2009;41(7):1510-1530. 2) Owen N, Healy GN, Matthews CE, Dunstan DW: Too much sitting: The population health science of sedentary behavior. *Exerc Sport Sci Rev* 2010;38(3):105-113. 3) Lee PG, Jackson EA, Richardson CR: Exercise prescriptions in older adults. *Am Fam Physician* 2017;95(7):425-432.

Item 162

ANSWER: B

This image shows typical hyphae of pityriasis versicolor, a superficial infection caused by yeasts in the genus *Malassezia*. Of the listed therapies, topical selenium sulfide would be the most appropriate first-line treatment. Topical antifungals such as terbinafine and miconazole are other first-line options. Oral fluconazole can be used, but oral therapy is usually reserved for when topical treatment is impractical or unsuccessful. Topical nystatin cream and oral nystatin are ineffective, and topical corticosteroids such as triamcinolone may temporarily suppress symptoms while exacerbating the infection.

Ref: Hu SW, Bigby M: Pityriasis versicolor: A systematic review of interventions. *Arch Dermatol* 2010;146(10):1132-1140. 2) Plensdorf S, Livieratos M, Dada N: Pigmentation disorders: Diagnosis and management. *Am Fam Physician* 2017;96(12):797-804.

Item 163

ANSWER: B

Maturity-onset diabetes of the young (MODY) is a form of diabetes mellitus in nonobese young adults (under age 30) who have preserved pancreatic β-cell function. Nearly 80% of patients with MODY are misdiagnosed as having type 1 or type 2 diabetes. These patients exhibit no signs of insulin resistance (metabolic syndrome, acanthosis nigricans, skin tags, androgenic alopecia), are not obese, have positive C-peptide levels, and have a strong family history of diabetes. MODY does not respond to metformin, but because β-cell function is preserved, the hyperglycemia does respond to sulfonylureas. While exercise and a balanced diet of appropriate portions and low carbohydrates are also necessary in patients with MODY, a ketogenic diet is not specifically indicated. Insulin is required only during pregnancy.

Ref: Kant R, Davis A, Verma V: Maturity-onset diabetes of the young: Rapid evidence review. *Am Fam Physician* 2022;105(2):162-167.

Item 164

ANSWER: A

This patient has acute low back pain of moderate severity. If acetaminophen and NSAIDs are ineffective when used alone, the most appropriate next step is a combination of both medications. Acetaminophen/NSAID combinations have been shown to be more effective for acute pain than either agent alone. CBD oil does not have a specific indication for acute pain, and low-quality studies show mixed results. Diclofenac topical gel is an appropriate treatment option for acute, non–low back musculoskeletal pain. This patient describes her pain as mild to moderate in severity, so other options should be tried before prescribing opioids such as hydrocodone/acetaminophen or oxycodone.

Ref: Amaechi O, Huffman MM, Featherstone K: Pharmacologic therapy for acute pain. *Am Fam Physician* 2021;104(1):63-72.

Item 165

ANSWER: B

All unvaccinated household contacts and sexual contacts should receive postexposure prophylaxis following significant exposure to hepatitis A within the previous 2 weeks. Healthy individuals 12 months to 40 years of age should receive the hepatitis A vaccine as prophylaxis. Infants younger than 12 months of age should receive immune globulin as postexposure prophylaxis. Individuals >40 years of age, as well as immunocompromised patients, should receive both hepatitis A vaccine and immune globulin.

Ref: Langan RC, Goodbred AJ: Hepatitis A. *Am Fam Physician* 2021;104(4):368-374.

Item 166

ANSWER: B

Hypertension in children up to age 12 is defined by a blood pressure at the 95th percentile or higher based on age, height, and sex. Starting at age 13, hypertension can be defined in absolute numbers of 130/80 mm Hg or higher. Diagnosing hypertension in children and adolescents requires careful evaluation, and it is recommended to recheck the blood pressure twice during the same visit using auscultation and average the values to determine the final blood pressure. If this results in a persistent hypertensive blood pressure level, initial lifestyle modifications should be recommended, and blood pressure should be rechecked in 1–2 weeks. Ambulatory blood pressure monitoring should be considered at that time, particularly if the blood pressure is borderline. If blood pressure remains high, a targeted evaluation for secondary hypertension and an evaluation for hyperlipidemia, diabetes mellitus, and renal disease should be performed, as well as checking upper and lower extremity blood pressures to evaluate for possible coarctation of the aorta. Referral to intensive programming for weight management and diet therapy would be appropriate at that time, particularly in children with obesity. Medication should not be started for asymptomatic stage 1 hypertension unless lifestyle modifications are unsuccessful.

Ref: Flynn JT, Kaelber DC, Baker-Smith CM, et al: Clinical practice guideline for screening and management of high blood pressure in children and adolescents. *Pediatrics* 2017;140(3):e20171904. 2) Riley M, Hernandez AK, Kuznia AL: High blood pressure in children and adolescents. *Am Fam Physician* 2018;98(8):486-494.

Item 167

ANSWER: E

The absolute risk reduction (ARR) in this meta-analysis was 0.4%. The number needed to screen is the reciprocal of the ARR. The number needed to screen would equal 1 divided by the ARR (1/ARR), or 1/0.004, which equals 250. Based upon this meta-analysis, 250 individuals would need to be screened to prevent one lung cancer death.

Ref: Rembold CM: Number needed to screen: Development of a statistic for disease screening. *BMJ* 1998;317(7154):307-312. 2) Ebell MH, Bentivegna M, Hulme C: Cancer-specific mortality, all-cause mortality, and overdiagnosis in lung cancer screening trials: A meta-analysis. *Ann Fam Med* 2020;18(6):545-552. 3) Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, p 29.

Item 168

ANSWER: C

The duration and characterization of this patient's cough are most suggestive of pertussis. Of the options listed, azithromycin is the most appropriate for management of pertussis. Azithromycin is most effective for treatment and minimizing spread of the disease within 21 days of symptom onset. Sulfamethoxazole/trimethoprim and other macrolides, such as erythromycin and clarithromycin, are also acceptable options.

Continued supportive care only does not provide the advantages of cure and minimization of community spread that are accomplished by initiating azithromycin. Symptomatic treatment with over-the-counter medication is appropriate but such supportive care does not replace the therapeutic advantages of azithromycin.

This patient's objection to routine vaccination should be explored as priorities allow. He should be vaccinated against pertussis with Tdap as soon as feasible, but the vaccination would not provide immediate treatment of his current episode of pertussis.

Doxycycline has shown benefit in other bacterial infections but does not provide effective treatment of pertussis. Based upon the duration of symptoms, quality of his cough, and lack of documented fevers, this patient is not likely to have influenza, so oseltamivir would not be appropriate.

Ref: Pertussis (whooping cough): Clinicians. Centers for Disease Control and Prevention, reviewed 2019. 2) Kline JM, Smith EA, Zavala A: Pertussis: Common questions and answers. *Am Fam Physician* 2021;104(2):186-192.

Item 169

ANSWER: A

The most important aspect of infection prevention in treating a superficial wound is cleaning and irrigation. Studies have shown that irrigation with tap water provides similar outcomes compared to sterile saline (SOR B). Antiseptic solutions such as hydrogen peroxide are no more effective than tap water, can be caustic to wound tissue, and may delay healing (SOR C). Antibiotics should be used for treatment of wound infections; however, non-infected wounds do not routinely require antibiotic prophylaxis unless there is an increased risk of infection. Risk factors for wound infection include bite wounds, delayed presentation, retained foreign material, insufficient cleaning, puncture or crush wounds, open fractures, significant immunocompromise, and joint, cartilage, or tendon involvement. Patients with three or more doses of tetanus toxoid with the most recent vaccination within the past 5 years do not require a tetanus booster or tetanus immune globulin for prophylaxis, regardless of the type of wound.

Ref: Worster B, Zawora MQ, Hsieh C: Common questions about wound care. *Am Fam Physician* 2015;91(2):86-92. 2) Rupert J, Honeycutt JD, Odom MR: Foreign bodies in the skin: Evaluation and management. *Am Fam Physician* 2020;101(12):740-747.

Item 170

ANSWER: B

Adrenal incidentalomas usually do not produce overt hormone excess, but mild autonomous cortisol secretion (MACS) is present in up to 30%–50% of cases. This mild secretion of cortisol may predispose patients to metabolic syndrome, osteoporosis, and cardiovascular events. MACS can be ruled out with an overnight 1-mg dexamethasone suppression test. The remainder of the evaluation can be based on CT findings and clinical symptoms.

An ACTH stimulation test is used to evaluate for adrenal insufficiency, which is not caused by an adenoma. If no hypertension or hypokalemia are present, the serum aldosterone and plasma renin activity paired values may not be necessary. Testing for metanephrines is indicated only if pheochromocytoma is suspected. If no clinical symptoms of pheochromocytoma (such as hypertension, sweating, or headaches) are present and the lesions are < 10 Hounsfield units on CT, pheochromocytoma and malignancy are very unlikely. A PET scan would not be indicated in this scenario.

Ref: Hitzeman N, Cotton E: Incidentalomas: Initial management. *Am Fam Physician* 2014;90(11):784-789. 2) Bancos I, Prete A: Approach to the patient with adrenal incidentaloma. *J Clin Endocrinol Metab* 2021;106(11):3331-3353.

Item 171

ANSWER: C

A nondisplaced spiral fracture of the distal tibial shaft (toddler's fracture) should be suspected in children from 9 months to 3 years of age who present with pain in the distal third of the tibia after minor or even unnoticed injury. Toddler's fractures can have subtle radiographic findings and may not be visible on initial radiographs, so repeat radiography to look for healing is appropriate. Standard treatment is immobilization of the affected leg. While the fracture may heal without immobilization, reassurance alone is not recommended given the unclear diagnosis. If repeat radiography is negative and symptoms have resolved, reassurance may then be appropriate. For children with possible septic arthritis, laboratory studies should be considered, but in this case there are no signs of infection. Bone scintigraphy is more sensitive than radiography and can be considered if follow-up radiography is negative and symptoms persist. Toddler's fractures routinely heal without complication, so referral to an orthopedic surgeon at this time would be premature.

Ref: Naranje S, Kelly DM, Sawyer JR: A systematic approach to the evaluation of a limping child. *Am Fam Physician* 2015;92(10):908-916. 2) Wang Y, Doyle M, Smit K, et al: The toddler's fracture. *Pediatr Emerg Care* 2022;38(1):36-39.

Item 172

ANSWER: C

Treatment of orthostatic hypotension begins with identifying and addressing the underlying cause(s) when possible. This may include correcting a reversible medical condition or discontinuing an offending medication. Nonpharmacologic measures should be initiated next and typically include increasing fluid and sodium intake, improving physical fitness, wearing compression garments, and avoiding hot and humid environments. When additional treatment is needed, first-line medication options include midodrine or droxidopa, which act by increasing peripheral vascular resistance. Off-label use of atomoxetine or pyridostigmine may be considered as adjunct therapy but these medications are not part of the initial management. The α-antagonist clonidine typically causes a decrease in blood pressure through central action on the sympathetic nervous system. In patients with autonomic dysfunction, however, clonidine can increase venous return without a blood pressure–lowering effect and therefore improve orthostatic hypotension, but it should only be considered a supplementary treatment. The α-sympathomimetic medication phenylephrine may also be considered as a second-line option, but it is not part of the initial management of orthostatic hypotension.

Ref: Freeman R, Abuzinadah AR, Gibbons C, et al: Orthostatic hypotension: JACC state-of-the-art review. *J Am Coll Cardiol* 2018;72(11):1294-1309. 2) Kim MJ, Farrell J: Orthostatic hypotension: A practical approach. *Am Fam Physician* 2022;105(1):39-49.

Item 173

ANSWER: D

Guidelines from the Global Initiative for Chronic Obstructive Lung Disease (GOLD), the National Initiative for Health and Care Excellence, and the American College of Chest Physicians all recommend that in addition to smoking cessation, COPD should be treated initially with either a long-acting β-agonist (LABA) or a long-acting muscarinic antagonist (LAMA). If symptoms persist with either of those inhaled medications then combination therapy should be initiated. An inhaled corticosteroid (ICS) can be added to the LABA/LAMA regimen for triple therapy if symptoms continue. Long-term use of an ICS as monotherapy is not recommended due to a slight increase in the incidence of pneumonia.

Ref: Gentry S, Gentry B: Chronic obstructive pulmonary disease: Diagnosis and management. *Am Fam Physician* 2017;95(7):433-441. 2) Drugs for COPD. *Med Lett Drugs Ther* 2020;62(1606):137-144. 3) *Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease*. Global Initiative for Chronic Obstructive Lung Disease, 2022.

Item 174

ANSWER: C

This patient likely has an eating disorder. A DEXA scan is recommended to assess for low bone mineral density in patients with suspected or diagnosed eating disorders. Other appropriate screenings include orthostatic vital signs; a basic metabolic panel; a CBC; magnesium, phosphorus, prealbumin, and amylase levels; thyroid testing; and an EKG. Fecal calprotectin levels, stool cultures, chest radiography, and thyroid ultrasonography are not appropriate for this patient.

Ref: Klein DA, Sylvester JE, Schvey NA: Eating disorders in primary care: Diagnosis and management. *Am Fam Physician* 2021;103(1):22-32.

Item 175

ANSWER: C

There are many patient-related historical factors that may affect the safety and choice of hormonal contraception, but very few physical factors are likely to be found on examination that would not otherwise have been identified. Obtaining a thorough medical history is standard practice, but the Choosing Wisely campaign recommends against requiring a pelvic or other physical examination prior to prescribing oral contraceptives. It is unnecessary to wait to begin hormonal contraception until after the next menses, as inadvertent exposure to oral contraception will not harm an early pregnancy. Prescribing a 1-year supply of hormonal contraceptives improves adherence and lowers cost. There is broad consensus that sexually transmitted infection screening and Papanicolaou testing should not be required to prescribe contraception.

Ref: Lesnewski R: Initiating hormonal contraception. *Am Fam Physician* 2021;103(5):291-300.

Item 176

ANSWER: C

This patient has the classic clinical manifestations of Kawasaki disease. All patients with Kawasaki disease should undergo echocardiography due to the high risk of coronary artery dilation and aneurysm associated with the disease. Chest radiography, neck ultrasonography, neck CT, and cardiac MRI are not recommended in the evaluation of a patient with Kawasaki disease and would only be recommended if another clinical indication for these studies were present.

Ref: Darby JB, Jackson JM: Kawasaki disease and multisystem inflammatory syndrome in children: An overview and comparison. *Am Fam Physician* 2021;104(3):244-252.

Item 177

ANSWER: E

This patient presents with a history of an atraumatic onset of radial-sided wrist pain that is typical of de Quervain's tenosynovitis, a common overuse injury involving the tendons of the first dorsal compartment, specifically the abductor pollicis longus and extensor pollicis brevis. This injury is most common in women 30–50 years of age and often occurs in new mothers who frequently pick up a child. Pain localizes to the radial styloid and is reproduced by Finkelstein's test, which involves placing the thumb inside a closed fist followed by ulnar deviation of the wrist. Focal tenderness in the anatomic snuffbox would suggest injury to the scaphoid, which is in the differential diagnosis for radial-sided wrist pain, although it usually occurs through direct trauma such as a fall onto an outstretched hand. Injury to the triangular fibrocartilage complex is a common cause of ulnar-sided, rather than radial-sided, wrist pain. Repeated percussion over the volar wrist with resultant pain and/or paresthesia in a median nerve distribution describes Tinel's sign for carpal tunnel syndrome. Thumb passive circumduction with an axial load to the first carpometacarpal (CMC) joint describes the CMC grind test, which elicits pain from CMC joint arthritis.

Ref: Shehab R, Mirabelli MH: Evaluation and diagnosis of wrist pain: A case-based approach. *Am Fam Physician* 2013;87(8):568-573. 2) Day CS, Wu WK, Smith CC: Examination of the hand and wrist. *N Engl J Med* 2019;380(12):e15.

Item 178

ANSWER: C

An organization that is now known as National POLST began as an advisory panel and task force to improve consistency in honoring the wishes of patients with serious illness or frailty regarding end-of-life care. POLST, originally an acronym for Physician Orders for Life-Sustaining Treatment, varies in name at the state level, although at the national level POLST is defined as a portable medical order. POLST forms differ from other legal advanced care planning documents such as advance directives and living wills, although the processes can work together.

The primary purpose of a POLST form is to provide specific medical orders in the event that a patient is unable to communicate. Legal advanced care planning documents, in contrast, express general treatment wishes and identify a health care proxy for surrogate decision-making but do not provide specific orders for care. POLST forms are completed by a treating physician and signed by the patient or surrogate and the physician, unlike advance directive documents, which are completed by the individual and are often notarized. POLST forms are intended only for patients with serious illness and frailty, not for healthy persons, whereas advance directives can be completed by any competent adult. POLST completion is voluntary and is neither a requirement for entering hospice nor a routine part of the Medicare annual wellness visit. Neither document type is intended to supersede the expressed wishes of a patient who can communicate.

Ref: Talebreza S, Widera E: Advance directives: Navigating conflicts between expressed wishes and best interests. *Am Fam Physician* 2015;91(7):480-484. 2) POLST for Health Care Professionals. National POLST website, 2022.

Item 179

ANSWER: D

The recommended interval for colon cancer screening with multitarget stool DNA testing is 3 years at minimum, with the U.S. Preventive Services Task Force recommending an interval of 1–3 years. If the screening is positive, proceeding with a colonoscopy is recommended. Fecal immunochemical testing (FIT) has an annual screening interval if the test is negative, and colonoscopy is recommended if the FIT is positive. Colonoscopy for patients without risk factors should be performed every 10 years, or sooner if indicated by pathology results or risk factors.

Ref: Shaukat A, Kahi CJ, Burke CA, et al: ACG clinical guidelines: Colorectal cancer screening 2021. *Am J Gastroenterol* 2021;116(3):458-479. 2) *Final Recommendation Statement: Colorectal Cancer: Screening*. US Preventive Services Task Force, 2021.

Item 180

ANSWER: D

COPD exacerbations, when caused by an infectious agent, may be bacterial or viral. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines support the use of antibiotics in patients with an acute COPD exacerbation with the three cardinal symptoms of increased dyspnea, increased sputum volume, and increased sputum purulence; in patients with increased sputum purulence and one of the other cardinal symptoms; and in patients who require invasive or noninvasive mechanical ventilation. Hypoxemia and fever, although often seen in the setting of COPD exacerbations, do not provide as strong an indication for treatment with antibiotics. Diffuse wheezing is a hallmark examination finding that is present in most COPD exacerbations, regardless of the underlying cause. Leukocytosis is a relatively nonspecific marker for acute inflammation and may be seen with either viral or bacterial etiologies. Serum biomarkers such as C-reactive protein and procalcitonin have yielded controversial and conflicting evidence in guiding antibiotic therapy.

Ref: *Global Strategy for Prevention, Diagnosis, and Management of COPD: 2022 Report*. Global Initiative for Chronic Obstructive Lung Disease, 2022.

Item 181

ANSWER: B

The 2016 CHEST guideline and expert panel report gives a strong recommendation (Grade 1B) to support 3 months of anticoagulation after a first episode of a provoked proximal deep vein thrombosis (DVT) of the leg. Treatment for 3 months appears to be superior to shorter treatment (6 weeks) with regard to recurrence of DVT. Treatment regimens >6 months for an unprovoked DVT may slightly reduce the rate of recurrence, but this is offset by an increased rate of bleeding and mortality.

Ref: Kearon C, Akl EA, Ornelas J, et al: Antithrombotic therapy for VTE disease: CHEST guideline and expert panel report. *Chest* 2016;149(2):315-352. 2) Kirkilesis G, Kakkos SK, Bicknell C, et al: Treatment of distal deep vein thrombosis. *Cochrane Database Syst Rev* 2020;(4):CD013422. 3) Arnold MJ: Venous thromboembolism: Management guidelines from the American Society of Hematology. *Am Fam Physician* 2021;104(4):429-431.

Item 182

ANSWER: B

The first step in the evaluation of a palpable thyroid nodule is to obtain a TSH level and perform thyroid ultrasonography (SOR C). If the TSH level is low, a radionucleotide thyroid uptake scan is the appropriate next step to assess for a hyperfunctioning nodule. If the TSH level is normal or high, next steps are determined by the size and characteristics of the thyroid nodule on ultrasonography. Fine-needle aspiration (FNA) may be indicated depending on the size and nodule characteristics. Molecular testing of FNA specimens is useful in order to guide management of thyroid nodules with indeterminate cytology. Before molecular testing is performed, patients should be counseled about the potential benefits and limitations of the test (SOR C). Observation only would not be appropriate in this scenario.

Ref: Kant R, Davis A, Verma V: Thyroid nodules: Advances in evaluation and management. *Am Fam Physician* 2020;102(5):298-304.

Item 183

ANSWER: C

Obsessive-compulsive disorder (OCD) affects 3% of the population and is characterized by intrusive thoughts (obsessions) and repetitive behaviors (compulsions). Obsessions are often religious, sexual, or violent in nature. They may include pathological doubting, preoccupation with contamination, concerns with symmetry, and a sense that something unpleasant or dangerous will happen if a particular ritual is not performed precisely. Typical compulsions include counting, checking, repeating, cleaning, and arranging behaviors. For the diagnosis to be made, these symptoms must be severe enough to cause marked distress or to impair functioning.

Most patients develop symptoms prior to age 35, and a large number of them keep these symptoms a secret. There is often a delay of 5–10 years before the illness comes to medical attention. With optimum treatment, 90% have moderate to marked improvement.

Treatment of OCD requires the integration of various approaches to maximize the outcome. Most patients experience substantial improvement using a combination of pharmacotherapy, particularly SSRIs, and cognitive behavioral therapy. Benzodiazepines such as alprazolam are capable of relieving generalized anxiety, but do not affect obsessions or compulsions. Antipsychotics such as risperidone may be added to an SSRI as second-line pharmacotherapy. Traditional psychodynamic psychotherapy is not effective for OCD.

Ref: Fenske JN, Petersen K: Obsessive-compulsive disorder: Diagnosis and management. *Am Fam Physician* 2015;92(10):896-903. 2) Hirschtritt ME, Bloch MH, Mathews CA: Obsessive-compulsive disorder: Advances in diagnosis and treatment. *JAMA* 2017;317(13):1358-1367.

Item 184

ANSWER: E

Meralgia paresthetica is a common cause of anterolateral hip pain and dysesthesia. It is caused by compression of the lateral femoral cutaneous nerve as it courses under the inguinal ligament into the subcutaneous tissue of the thigh. Tapping over this area during the examination can reproduce symptoms. Obesity is a common cause due to compression of the nerve from overlying pannus. Diabetes mellitus is associated with a sevenfold higher incidence over the general population. Cauda equina syndrome presents with saddle anesthesia and generally marked neurologic disability. Diabetic neuropathy is a peripheral neuropathy initially affecting distal structures such as the toes and feet. Femoral neuropathy would affect sensation in the anteromedial thigh and medial lower leg with weakness in the quadriceps muscle group. The anterolateral thigh would represent the L3-L4 dermatome rather than S1, and the normal straight leg raising test and absence of back pain are evidence against an S1 issue.

Ref: Parisi TJ, Mandrekar J, Dyck PJB, Klein CJ: Meralgia paresthetica: Relation to obesity, advanced age, and diabetes mellitus. *Neurology* 2011;77(16):1538-1542. 2) Frontera WR, Silver JK, Rizzo TD Jr (eds): *Essentials of Physical Medicine and Rehabilitation: Musculoskeletal Disorders, Pain, and Rehabilitation*, ed 4. Elsevier, 2019, p 303. 3) Loscalzo J, Fauci AS, Kasper DL, et al (eds): *Harrison's Principles of Internal Medicine*, ed 21. McGraw Hill, 2022, pp 119, 568-569, 3498.

Item 185

ANSWER: A

This patient presents with microscopic hematuria without a clear cause. Past guidelines from the American Urologic Association recommended cystoscopy and CT urography for all patients over the age of 35 with microscopic hematuria. However, current guidelines recommend risk stratification and emphasize the use of imaging that has less radiation exposure. Because she is female and younger than 50 years of age, this patient is at low risk of urologic malignancy. Her smoking history and RBC count of <10 RBCs/hpf are also considered low risk. The guidelines recommend the option of repeating urinalysis in 6 months before proceeding with imaging or procedures, given her low risk (SOR C). Renal ultrasonography may be used in intermediate-risk patients, while CT urography is reserved for high-risk patients. Urine cytology is not a recommended test in this setting.

Ref: Barocas DA, Boorjian SA, Alvarez RD, et al: Microhematuria: AUA/SUFU guideline. *J Urol* 2020;204(4):778-786. 2) Judge C, Cifu AS, Faris S: Management of patients with microhematuria. *JAMA* 2021;326(6):563-564.

Item 186

ANSWER: A

Annular lesions can be a presentation of several different conditions. This patient's history of possible tick exposure and current prodromal constitutional symptoms suggest acute Lyme disease. Erythema migrans is the characteristic rash of acute Lyme disease. Erythema multiforme can be spontaneous, related to a viral or *Mycoplasma* infection, or associated with a medication reaction. Prodromal symptoms are uncommon in limited erythema multiforme and the clinical context of this case suggests a different etiology. Nummular eczema is an intensely pruritic, annular lesion that is not associated with constitutional symptoms. Pityriasis rosea is thought to be viral in etiology and is usually otherwise asymptomatic. Tinea corporis is a fungal infection and is not associated with systemic symptoms.

Ref: Lamoreux MR, Sternbach MR, Hsu WT: Erythema multiforme. *Am Fam Physician* 2006;74(11):1883-1888. 2) Drago F, Broccolo F, Rebora A: Pityriasis rosea: An update with a critical appraisal of its possible herpesviral etiology. *J Am Acad Dermatol* 2009;61(2):303-318. 3) Trayes KP, Savage K, Studdiford JS: Annular lesions: Diagnosis and treatment. *Am Fam Physician* 2018;98(5):283-291.

Item 187

ANSWER: A

This patient has apophysitis at the insertion of the patellar tendon at the tibial tubercle. The clinical diagnosis of Osgood-Schlatter disease is based on history and examination, and imaging is not needed initially. If this patient's symptoms persist despite treatment, or if there are atypical features or a history of trauma, imaging would be appropriate. Plain film radiography or ultrasonography would be a good first step, with ultrasonography offering the advantage of no radiation exposure. MRI and a bone scan would not be indicated.

Ref: Achar S, Yamanaka J: Apophysitis and osteochondrosis: Common causes of pain in growing bones. *Am Fam Physician* 2019;99(10):610-618.

Item 188

ANSWER: C

Forced vital capacity (FVC) is the total amount of air that can be expelled from full lungs. A decreased FVC on spirometry indicates a restrictive pattern. FEV_1 is the volume of air (in liters) that is exhaled in the first second during forced exhalation after maximal inspiration. A normal FEV_1/FVC ratio and normal FVC would indicate a normal pattern. A decreased FEV_1/FVC ratio with a decreased FVC is consistent with a mixed pattern. A reduced FEV_1/FVC ratio indicates an obstructive pattern. A bronchodilator is then utilized to determine whether the obstructive pattern is reversible or irreversible.

Ref: Langan RC, Goodbred AJ: Office spirometry: Indications and interpretation. *Am Fam Physician* 2020;101(6):362-368.

Item 189

ANSWER: E

Resistant hypertension occurs in 5%–10% of adults with hypertension. In this patient, renal artery stenosis is suggested by the increase in creatinine of more than 50% after starting an ACE inhibitor. CT angiography, renal artery duplex ultrasonography, and MR angiography are appropriate diagnostic tests for renal artery stenosis. Other causes of resistant hypertension include hyperaldosteronism (diagnosed with renin and aldosterone levels), thyroid disorders (diagnosed with TSH levels), Cushing syndrome (diagnosed with 24-hour urinary free cortisol), and pheochromocytoma (diagnosed with 24-hour urinary fractionated metanephrines and normetanephrines).

Ref: Charles L, Triscott J, Dobbs B: Secondary hypertension: Discovering the underlying cause. *Am Fam Physician* 2017;96(7):453-461.

Item 190

ANSWER: D

Herpes gingivostomatitis is the enanthem associated with a primary herpes simplex virus 1 infection, and it is the only condition listed here that is treated with antivirals such as acyclovir or valacyclovir. Behçet's syndrome is an inflammatory condition presenting with oral and genital aphthous ulcerations. The cause is unknown and it is frequently managed with topical or systemic corticosteroids or colchicine. Hand-foot-and-mouth disease and herpangina are caused by coxsackie or enterovirus and supportive care is most appropriate for both of these. Vincent's angina (also known as trench mouth or necrotizing ulcerative gingivitis) is a bacterial infection of the gingiva associated with poor hygiene. It is treated with systemic antibiotics such as metronidazole or amoxicillin/clavulanate.

Ref: Saguil A, Kane SF, Lauters R, Mercado MG: Hand-foot-and-mouth disease: Rapid evidence review. *Am Fam Physician* 2019;100(7):408-414.

Item 191

ANSWER: B

Chronic alcohol use is one of the most common causes of macrocytic anemia. This patient's normal peripheral smear and reticulocyte index $<2\%$ in the setting of anemia suggest decreased red blood cell production, which may be related to alcohol use or nutritional deficiency. Vitamin B_{12} and folate levels in the normal range rule out deficiencies in these vitamins, though patients with low-normal vitamin B_{12} and folate levels may warrant testing of homocysteine and methylmalonic acid levels. Anemia of chronic disease is typically characterized by a normocytic or microcytic anemia and a low reticulocyte count. Blood loss and hemolytic anemia are typically associated with a reticulocyte index $>2\%$. Myelodysplastic syndrome is not suggested by the peripheral smear and is less common than anemia related to alcohol use disorder.

Ref: Kaferle J, Strzoda CE: Evaluation of macrocytosis. *Am Fam Physician* 2009;79(3):203-208. 2) Lanier JB, Park JJ, Callahan RC: Anemia in older adults. *Am Fam Physician* 2018;98(7):437-442.

Item 192

ANSWER: A

Of the options listed, any primigravida should be encouraged to consider a hospital delivery rather than an out-of-hospital delivery. Pregnant patients with a previous cesarean delivery, multiple gestation (twins or higher), or fetal malpresentation (breech or other) should also be strongly encouraged to deliver in a hospital setting (SOR B). Similarly, pregnant patients at ≥41 weeks gestation should be encouraged to pursue a hospital delivery (SOR B). The age of the mother is not relevant in this decision unless there are other related increased risks and comorbidities that need to be considered.

Patients who do plan a community birth should ensure that their maternity and neonatal health professionals are licensed and meet international Confederation of Midwives Global Standards for Midwifery Education, are practicing within an integrated and regulated health system, and have access to timely and safe transport to a hospital if necessary (SOR C). Unassisted childbirth should also be strongly discouraged (SOR C).

Ref: Lang G, Farnell EA 4th, Quinlan JD: Out-of-hospital birth. *Am Fam Physician* 2021;103(11):672-679.

Item 193

ANSWER: A

Routine screening for nonalcoholic fatty liver disease (NAFLD) is not recommended for any patients, even those considered to be at high risk. The highest risk factor for NAFLD is obesity, and other risk factors include type 2 diabetes and metabolic syndrome. There is emerging evidence that HIV, hypothyroidism, polycystic ovary syndrome, obstructive sleep apnea, and genetic variation of the *PNPLA3* gene are likely risk factors as well. NAFLD is usually discovered with the incidental finding of elevated liver enzymes. An AST/ALT ratio >1.5 is suspicious for excessive alcohol use, while a ratio of ≤ 0.8 is more likely due to NAFLD.

If NAFLD is suspected, the first step is to obtain a detailed history, particularly for hepatotoxic medications and alcohol use. Drugs that can be problematic include chemotherapy medications, amiodarone, aspirin, corticosteroids, cocaine, NSAIDs, tetracyclines, and valproic acid. The next step is to evaluate for hepatitis B and C infection and measure ferritin and iron levels, lipids, and a fasting glucose level or hemoglobin A_{1c}. If these are negative, then ultrasonography of the liver should be ordered.

Ref: Westfall E, Jeske R, Bader AR: Nonalcoholic fatty liver disease: Common questions and answers on diagnosis and management. *Am Fam Physician* 2020;102(10):603-612.

Item 194

ANSWER: A

Vitamin A intoxication can cause hypercalcemia. This includes analogs of vitamin A such as those used to treat acne. The excessive intake of vitamin A is associated with multisystem effects that can include bone resorption and hypercalcemia. Sources of preformed vitamin A include supplements as well as animal sources such as liver, fish liver oil, dairy, and eggs. Vitamin A toxicity should be considered in unexplained cases of parathyroid hormone–independent hypercalcemia. Vitamins B_1, C, E, and K are not associated with hypercalcemia.

Ref: Borgan SM, Khan LZ, Makin V: Hypercalcemia and vitamin A: A vitamin to keep in mind. *Cleve Clin J Med* 2022;89(2):99-105.

Item 195

ANSWER: B

An ACTH stimulation test is the most appropriate confirmatory test for suspected adrenal insufficiency. If a cortisol level drawn 1 or 2 hours after administration of ACTH is inappropriately low, adrenal insufficiency is confirmed, and further evaluation is indicated to determine the etiology. A 21-hydroxylase antibody level may indicate that adrenal insufficiency has an autoimmune cause but does not confirm the presence of adrenal insufficiency. Dexamethasone suppression tests, in which morning cortisol is tested after administration of dexamethasone the previous evening, are used in the evaluation of suspected Cushing syndrome. Inappropriately elevated cortisol levels are indicative of Cushing syndrome. Imaging might be useful in determining the cause of adrenal gland dysfunction once adrenal insufficiency is confirmed.

Ref: Michels A, Michels N: Addison disease: Early detection and treatment principles. *Am Fam Physician* 2014;89(7):563-568.

Item 196

ANSWER: C

Attention-deficit/hyperactivity disorder in preschool children aged 4–5 years should be managed initially with behavioral intervention. Starting at age 6, pharmacologic medication such as atomoxetine or methylphenidate could be considered. There is no evidence of any benefit with dietary modification or vitamin supplementation.

Ref: Chang JG, Cimino FM, Gossa W: ADHD in children: Common questions and answers. *Am Fam Physician* 2020;102(10):592-602.

Item 197

ANSWER: D

Knee injuries are an extremely common cause for primary care visits and knowing which injuries require radiography can ensure high-value care. The Ottawa knee rule has been repeatedly validated with a sensitivity of 98.5%–100% and can decrease unnecessary imaging. The major criteria of the Ottawa knee rule are age ≥55, the inability to bear weight for four steps both immediately after the injury and at the time of the examination, the inability to flex the knee to 90°, tenderness over the head of the fibula, and isolated tenderness to the patella without other bony tenderness. If a patient meets any of these criteria, radiography of the knee may be indicated.

Ref: Bachmann LM, Haberzeth S, Steurer J, ter Riet G: The accuracy of the Ottawa knee rule to rule out knee fractures: A systematic review. *Ann Intern Med* 2004;140(2):121-124. 2) Grover M: Evaluating acutely injured patients for internal derangement of the knee. *Am Fam Physician* 2012;85(3):247-252.

Item 198

ANSWER: A

Individuals are assumed to have the mental capacity to make their own medical decisions unless there are reasons to question a patient's capacity, such as risk factors for impaired decision-making or abrupt changes in mental status. It is the responsibility of the care team to honor the reasonable wishes of each patient, including decisions regarding end-of-life care. DNR/DNI orders can be fluid and changed throughout a hospital stay as more information becomes available. Patients should be provided with the tools needed to make medical decisions and ensure that they have insight into the consequences of the decisions. A DNR/DNI order should be written at this patient's request without administering a depression screen or consulting other professionals.

Ref: Brody BD, Meltzer EC, Feldman D, et al: Assessing decision making capacity for do not resuscitate requests in depressed patients: How to apply the "communication" and "appreciation" criteria. *HealthCare Ethics Committee Forum* 2017;29(4):303-311. 2) Barstow C, Shahan B, Roberts M: Evaluating medical decision-making capacity in practice. *Am Fam Physician* 2018;98(1):40-46.

Item 199

ANSWER: E

This EKG shows a short P-R interval with a slurred upstroke in the QRS complex in the precordial leads. These findings are classic for Wolff-Parkinson-White (WPW) syndrome. In symptomatic patients with sustained ventricular tachycardias, especially with the more dangerous paroxysmal atrial fibrillation, catheter ablation is the preferred therapy. Up to 95% success has been reported.

Aspirin alone would be ineffective for anticoagulation in atrial fibrillation, and would not be indicated for this young patient with no other risk factors for stroke. "Pill-in-the-pocket" therapy with agents such as flecainide or propafenone can be used for paroxysmal atrial fibrillation in structurally normal hearts. However, they are not the treatment of choice with WPW syndrome.

β-Blockers, adenosine, digitalis, diltiazem, and verapamil are contraindicated because they can facilitate conduction on the accessory pathway. This can lead to more rapid atrial fibrillation or even degeneration into ventricular fibrillation. A young patient with a structurally normal heart does not require anticoagulation with warfarin.

Ref: Helton MR: Diagnosis and management of common types of supraventricular tachycardia. *Am Fam Physician* 2015;92(9):793-800. 2) Goldman L, Schafer AI (eds): *Goldman-Cecil Medicine*, ed 26. Elsevier, 2020, p 356.

Item 200

ANSWER: D

Antiviral medications are recommended for the treatment of influenza only within 48 hours of symptom onset (SOR A). However, in high-risk patient populations and in severe cases of disease, antiviral medications should be provided regardless of the duration of symptoms (SOR B). According to the CDC, oseltamivir remains the drug of choice for the treatment of influenza A and B during pregnancy because it has good safety data. Baloxavir marboxil is indicated for patients >12 years of age but should be avoided during pregnancy. There is less safety data for peramivir and zanamivir.

Ref: Gaitonde DY, Moore FC, Morgan MK: Influenza: Diagnosis and treatment. *Am Fam Physician* 2019;100(12):751-758.