American Board of Family Medicine

2024 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: A

This patient is at risk for both psychogenic polydipsia due to intellectual disability and nephrogenic diabetes insipidus due to lithium therapy. The combination of ongoing polydipsia, polyuria despite fluid restriction, and nocturia suggests diabetes insipidus rather than psychogenic polydipsia. Diabetes insipidus is a loss of free water in the urine due to a lack of antidiuretic hormone (central) or insensitivity to antidiuretic hormone in the kidney (nephrogenic). Interstitial cystitis and overactive bladder can cause urinary frequency but not polydipsia. Syndrome of inappropriate antidiuretic hormone secretion (SIADH) is associated with a low sodium level and does not cause polyuria.

Reference

Levy M, Prentice M, Wass J. Diabetes insipidus. *BMJ*. 2019;364:l321.

Item 2

ANSWER: E

Continuing warfarin is not recommended prior to elective procedures or surgeries in patients who are taking warfarin for stroke prevention secondary to atrial fibrillation. The BRIDGE trial excluded patients who had an ischemic stroke within the previous 12 weeks but included those with more distant strokes. For such patients, cessation of warfarin without bridging with low-molecular-weight heparin or antiplatelet agents is the appropriate management strategy. There is no evidence that using a lower target INR is appropriate.

Reference

Douketis JD, Spyropoulos AC, Murad MH, et al. Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*. 2022;162(5):e207-e243.

Item 3

ANSWER: A

For patients with mild hidradenitis suppurativa, topical clindamycin is recommended as first-line treatment and often works well as monotherapy (SOR B). Patients with hidradenitis suppurativa who have overweight and smoke should be advised that weight loss and smoking cessation have been shown to decrease severity of disease and improve treatment response (SOR A). For patients with moderate disease, oral tetracyclines in addition to topical clindamycin are recommended as first-line therapy. Although intralesional triamcinolone may be considered for procedural management of mild hidradenitis suppurativa, topical triamcinolone is not recommended. Other oral antibiotics that have shown benefit include clindamycin and rifampin, although azithromycin is not a recommended treatment option. While NSAIDs such as topical diclofenac and oral meloxicam may help to alleviate discomfort associated with active lesions, they are not part of the routine management of hidradenitis suppurativa.

Reference

Wipperman J, Bragg DA, Litzner B. Hidradenitis suppurativa: rapid evidence review. *Am Fam Physician*. 2019;100(9):562-569.

Item 4

ANSWER: E

Intravenous tranexamic acid is an appropriate therapeutic option to manage acute bleeding in this hemodynamically stable patient with acute severe uterine bleeding. Intravenous conjugated estrogen is recommended in patients who are hemodynamically unstable. Depot medroxyprogesterone acetate and NSAID therapies are recommended for chronic management. A history of ductal carcinoma in situ is a contraindication for both progestin and estrogen therapy. Estrogens or tranexamic acid should be avoided in patients with a high thrombosis risk.

Reference

Wouk N, Helton M. Abnormal uterine bleeding in premenopausal women. *Am Fam Physician*. 2019;99(7):435-443.

Item 5

ANSWER: C

This patient's EKG shows a prolonged QTc interval (>460 milliseconds for women). QT prolongation can indicate polymorphic ventricular tachycardia characterized by palpitations. QT prolongation can be congenital or acquired. Escitalopram and other antidepressants are associated with QT prolongation. Any QT-prolonging medications should be discontinued, and a subsequent EKG should be obtained once the drug levels are expected to be minimal.

Reassurance only would not be the most appropriate next step as QT prolongation can lead to torsades de pointes, a potentially fatal arrhythmia (SOR C). Cetirizine and fluticasone are not known to prolong the QT interval. Echocardiography would not be the next step in management.

References

Kandiah JW, Blumberger DM, Rabkin SW. The fundamental basis of palpitations: a neurocardiology approach. *Curr Cardiol Rev*. 2022;18(3):e090921196306.

Khatib R, Sabir FRN, Omari C, Pepper C, Tayebjee MH. Managing drug-induced QT prolongation in clinical practice. *Postgrad Med J*. 2021;97(1149):452-458.

Runser LA, Gauer RL, Houser A. Syncope: evaluation and differential diagnosis. *Am Fam Physician*. 2017;95(5):303-312.

Wexler RK, Pleister A, Raman SV. Palpitations: evaluation in the primary care setting. *Am Fam Physician*. 2017;96(12):784-789.

Item 6

ANSWER: C

Although lifestyle modification remains the first-line treatment of metabolic dysfunction–associated steatotic liver disease (formerly known as nonalcoholic fatty liver disease), pioglitazone increases the resolution of nonalcoholic steatohepatitis, especially in patients with advanced fibrosis. Pioglitazone may cause weight gain and should be avoided in patients with heart failure, and it carries a small risk for bladder cancer. Glyburide, metformin, repaglinide, and vitamin D (cholecalciferol) do not improve steatohepatitis or fibrosis.

Reference

Arnold MJ. Nonalcoholic fatty liver disease: diagnosis and management guidelines from the AACE. *Am Fam Physician*. 2023;107(5):554-556.

Item 7

ANSWER: C

The U.S. Preventive Services Task Force recommends screening for colon cancer in adults ages 45–49 (B recommendation) and ages 50–75 (A recommendation). Neither screening for cardiovascular disease with an EKG nor screening for carotid artery disease with carotid ultrasonography in individuals without symptoms is recommended. Prostate cancer screening with a prostate-specific antigen level can be considered in men ages 55–69 after discussion of potential benefits and possible harms (C recommendation) with shared decision-making. There is insufficient evidence to recommend screening for vitamin D deficiency (I recommendation).

References

US Preventive Services Task Force. Final recommendation statement: asymptomatic carotid artery stenosis: screening. Updated February 2, 2021.

US Preventive Services Task Force. Final recommendation statement: cardiovascular disease risk: screening with electrocardiography. Updated June 12, 2018.

US Preventive Services Task Force. Final recommendation statement: colorectal cancer: screening. Updated May 18, 2021.

US Preventive Services Task Force. Final recommendation statement: prostate cancer: screening. Updated May 8, 2018.

US Preventive Services Task Force. Final recommendation statement: vitamin D deficiency in adults: screening. Updated April 13, 2021.

Item 8

ANSWER: C

Laser-assisted in-situ keratomileusis (LASIK) surgery involves the surgical removal of an anterior corneal flap, stromal ablation, and replacement of the flap. LASIK and photorefractive keratectomy (PRK) are considered the standard surgical procedures for the correction of myopia and other refractive errors, such as hyperopia and astigmatism. Ninety-eight percent of patients achieve a visual acuity of 20/40 or better. Common complications include glare symptoms, dry eye, undercorrection, and overcorrection. Significant serious complications include keratitis, epithelial ingrowth, or flap dissection. Refractive surgery does not correct age-related farsightedness (presbyopia), which is due to loss of lens elasticity, rather than a corneal problem. LASIK is not used to treat cataracts, closed-angle glaucoma, or retinal detachment.

Reference

Wilkinson JM, Cozine EW, Kahn AR. Refractive eye surgery: helping patients make informed decisions about LASIK. *Am Fam Physician*. 2017;95(10):637-644.

Item 9

ANSWER: D

The diagnosis of osteoporosis can be made with a prior fracture of the hip or spine, or a T-score ≤–2.5. A FRAX score ≥3% for hip fracture or ≥20% for major osteoporotic fracture is also diagnostic. The usual first-line treatment is an oral bisphosphonate such as alendronate or intravenous zoledronic acid. Denosumab would be preferred if the creatinine clearance were less than 30–35 mL/min/1.73 m^2.

Patients such as this one would be considered at very high fracture risk. Diagnostic criteria for this risk category include a T-score <–3.0, a FRAX score ≥4.5% for hip fracture or ≥30% for major osteoporotic fracture, multiple fractures, fracture within 12 months, or fracture during treatment for osteoporosis. The initial treatment recommendation would be a parathyroid hormone analogue such as teriparatide daily for 2 years.

Raloxifene is indicated for the prevention of vertebral fractures only. It is useful in patients with a history of breast cancer to help decrease the risk for recurrence.

Reference

Harris K, Zagar CA, Lawrence KV. Osteoporosis: common questions and answers. *Am Fam Physician*. 2023;107(3):238-246.

Item 10

ANSWER: A

First-degree (superficial) and second-degree (partial-thickness) burns in adults can usually be managed in the outpatient setting. Management options include analgesia with anti-inflammatories or opioids if necessary, and topical agents to keep the burn area moist. Multiple agents can be used as a topical antiseptic, including silver sulfadiazine, honey, and aloe vera. Oral antibiotics are not indicated in the initial management unless there are obvious signs of infection.

References
Lanham JS, Nelson NK, Hendren B, Jordan TS. Outpatient burn care: prevention and treatment. *Am Fam Physician*. 2020;101(8):463-470.

Norman G, Christie J, Liu Z, et al. Antiseptics for burns. *Cochrane Database Syst Rev*. 2017;7(7):CD011821.

Item 11

ANSWER: E

Primary aldosteronism is a common cause of resistant hypertension, although it is largely underrecognized. Initial screening is accomplished through simultaneous measurement of plasma aldosterone and renin levels. An elevated plasma aldosterone to renin ratio identifies patients with probable aldosteronism who may then undergo confirmatory testing if clinically indicated; in some cases, additional testing is not needed to reach a diagnosis. Medications that most significantly impact the renin-angiotensin-aldosterone system, particularly mineralocorticoid receptor antagonists such as spironolactone, ideally should be withheld for a minimum of 4 weeks prior to testing for primary aldosteronism. Other antihypertensive medication classes, including ACE inhibitors, angiotensin receptor blockers, diuretics, β-blockers, and dihydropyridine calcium channel blockers, also may interfere with test results, although less significantly than mineralocorticoid receptor antagonists.

References
Hundemer GL, Vaidya A. Primary aldosteronism diagnosis and management: a clinical approach. *Endocrinol Metab Clin North Am*. 2019;48(4):681-700.

Quencer KB, Rugge JB, Senashova O. Primary aldosteronism. *Am Fam Physician*. 2023;108(3):273-277.

Item 12

ANSWER: C

Pharmacologic options for the treatment of urge incontinence, or overactive bladder (OAB), include antimuscarinic medications such as tolterodine and oxybutynin, and β-adrenergic agonists such as mirabegron and vibegron. Antimuscarinic medications should be used with caution in older patients due to high risk for anticholinergic side effects such as tachycardia, confusion, constipation, dry mouth, and blurry vision. Selective antimuscarinics such as darifenacin and solifenacin are preferred to their nonselective counterparts such as oxybutynin and tolterodine due to a lower risk for cognitive adverse effects. The risk for anticholinergic side effects also increases for patients who are already taking medications with anticholinergic potential such as doxepin, a tricyclic antidepressant that is also used in the treatment of insomnia. β-Agonist–related side effects may include gastrointestinal upset, dizziness, and headache; mirabegron but not vibegron has also been associated with elevated blood pressure. In general, however, β-agonists introduce a lower risk for adverse effects than antimuscarinic medications and are preferred for older patients who are at increased risk for anticholinergic side effects.

Intravaginal estrogen may improve OAB symptoms, but it is not FDA approved for this indication. Oral estrogen worsens incontinence and introduces a risk for adverse effects related to systemic hormone therapy. Duloxetine, an SNRI, has low-level evidence of benefit for stress incontinence but not for urge incontinence.

References

Chapple CR, Cruz F, Cardozo L, et al. Safety and efficacy of mirabegron: analysis of a large integrated clinical trial database of patients with overactive bladder receiving mirabegron, antimuscarinics, or placebo. *Eur Urol*. 2020;77(1):119-128.

Gemtesa (vibegron) tablets. Prescribing information. US Food and Drug Administration; revised December 2020.

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

Lozano-Ortega G, Walker DR, Johnston K, et al. Comparative safety and efficacy of treatments for overactive bladder among older adults: a network meta-analysis. *Drugs Aging*. 2020;37(11):801-816.

Item 13

ANSWER: E

Pneumocystis jirovecii pneumonia (PJP), previously known as *Pneumocystis carinii* pneumonia, is a fungus that causes severe pneumonia in immunosuppressed individuals. It is a classic AIDS-defining illness but can also affect those on prolonged courses of corticosteroids or other forms of immunosuppression. This patient's presentation of notable dyspnea, hypoxia, no focal lung sounds, and bilateral interstitial infiltrates on radiography is consistent with PJP.

This patient may also have community-acquired bacterial pneumonia. Antibiotic treatment with sulfamethoxazole/trimethoprim for PJP along with standard antibiotics for bacterial pneumonia should be initiated while additional tests are pending. An elevated serum lactate dehydrogenase level has a correlation with PJP, although it has poor specificity, especially in those without HIV. Serum β-glucan is indicative of a fungal infection and can be supportive of a diagnosis of PJP.

Reference

Morris A, Masur H. *Pneumocystis* infections. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 1. 21st ed. McGraw-Hill; 2022:1691-1695.

Item 14

ANSWER: A

Bipolar I disorder does not require a history of a major depressive episode and may be diagnosed and treated based on just 1 manic episode. The diagnosis of bipolar II disorder requires at least 1 hypomanic and 1 major depressive episode. Borderline personality disorder may coexist with bipolar I disorder but the diagnosis is based on the presence of unstable personal relationships and severe impulsivity. Cyclothymic disorder presents with a history of both hypomanic and depressive symptoms that do not meet the full criteria for hypomanic or major depressive episodes. Disruptive mood dysregulation disorder is a condition diagnosed between the ages of 6 and 18, characterized by severe recurrent outbursts of temper.

Reference

American Psychiatric Association. Bipolar and related disorders. In: *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed, text revision. American Psychiatric Association; 2022:123-154.

Item 15

ANSWER: B

Evidence supports the use of topical NSAIDs such as diclofenac for first-line pharmacologic treatment of both cyclic and noncyclic mastalgia (SOR B). Topical NSAIDs are preferred over oral NSAIDs due to lower risk for adverse effects. Although caffeine is commonly cited as a contributing cause of breast pain, randomized, controlled trials have not demonstrated clear evidence that caffeine avoidance reduces pain. Patients with galactorrhea should undergo hormone evaluation with measurement of prolactin and TSH levels, although hormone evaluation is not indicated for patients with breast pain who present without associated nipple discharge. Patients without a palpable mass who present with cyclic breast pain, such as the patient in this scenario, are at low risk for breast cancer and do not require imaging.

Reference

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

Item 16

ANSWER: E

Even short courses of systemic corticosteroids are associated with many possible adverse effects, including mood and sleep disturbance, hyperglycemia, elevated blood pressure, sepsis, fracture, and venous thromboembolism. Hair loss, hyperkalemia, hypoglycemia, and hypotension are not among the side effects of short-term corticosteroid use.

Reference

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

Item 17

ANSWER: B

Eccentric exercise is recommended over concentric exercise to treat posterior tibial tendinopathy. Because tendinopathy is not an inflammatory process, oral corticosteroids are not indicated. Corticosteroids injected into the tendon can provide some short-term relief of pain but have the potential to cause tendon rupture. Needle tenotomy is not a recommended treatment for posterior tibial tendinopathy. If the pain persists 3–6 months after appropriate conservative management, surgical debridement of the tendon may be considered.

Reference
Deu RS, Coslick AM, Dreher G. Tendinopathies of the foot and ankle. *Am Fam Physician*. 2022;105(5):479-486.

Item 18

ANSWER: A

An acute cough is a cough of <3 weeks' duration in people without asthma and no red-flag symptoms of dyspnea or hemoptysis, or systemic symptoms such as fever, weight loss, or peripheral edema. Although there is significant use of prescribed and over-the-counter medications by patients, there is limited evidence to support pharmacotherapy for the symptomatic treatment of acute cough. The majority (90%–98%) of cases of acute cough are viral upper respiratory tract symptoms that resolve within 7–10 days. Several studies have validated the benefits of honey in patients >1 year of age for acute viral upper respiratory tract symptoms. Honey has antibacterial and antiviral properties in addition to decreasing mucus production and cough without the potential side effects of prescription or over-the-counter cough medications.

Acute cough is typically caused by viruses and antibiotics are not indicated. Antitussives, opioids such as codeine or hydrocodone, inhaled or oral corticosteroids, inhaled β-agonists or anticholinergics, mucolytics, NSAIDs, first-generation antihistamines, decongestants, and guaifenesin have significant side-effect profiles and do not decrease illness duration or symptoms in most patients. Dextromethorphan in particular can increase the serotonin effect in patients taking SSRIs, and this patient is taking sertraline.

References
Abuelgasim H, Albury C, Lee J. Effectiveness of honey for symptomatic relief in upper respiratory tract infections: a systematic review and meta-analysis. *BMJ Evid Based Med*. 2021;26(2):57-64.

Hay AD, Little P, Harnden A, et al. Effect of oral prednisolone on symptom duration and severity in nonasthmatic adults with acute lower respiratory tract infection: a randomized clinical trial. *JAMA*. 2017;318(8):721-730.

Larsen P, Ahmed M. Evaluation of biological activities and medicinal properties of honey drops and honey lozenges. *Nutrients*. 2022;14(22):4738.

Murgia V, Manti S, Licari A, De Filippo M, Ciprandi G, Marseglia GL. Upper respiratory tract infection-associated acute cough and the urge to cough: new insights for clinical practice. *Pediatr Allergy Immunol Pulmonol*. 2020;33(1):3-11.

Smith MP, Lown M, Singh S, et al. Acute cough due to acute bronchitis in immunocompetent adult outpatients: CHEST Expert Panel report. *Chest*. 2020;157(5):1256-1265.

Item 19

ANSWER: C

This patient has severe asymptomatic hypertension, also known as hypertensive urgency. This condition is characterized by a systolic blood pressure of >180 mm Hg and a diastolic blood pressure of >110 mm Hg, with no evidence of end-organ damage. Patients with this condition are often nonadherent to their routine blood pressure medications, and resuming the regimen with close follow-up is the best treatment. While alcohol, amphetamines, and cocaine can elevate blood pressure, ruling out substance abuse is not the first step in management. It is extremely rare to find abnormalities on an EKG, a chest x-ray, or cardiac markers in asymptomatic patients and these diagnostic tests are not recommended. Acute treatment with clonidine or other oral agents to lower blood pressure prior to discharge does not improve outcomes. Hypertensive urgency does not require the intensive monitoring, intravenous therapy, or advanced testing available at an emergency department.

References

Gauer R. Severe asymptomatic hypertension: evaluation and treatment. *Am Fam Physician*. 2017;95(8):492-500.

Hanna J, Ghazi L, Yamamoto Y, et al. Excessive blood pressure response to clonidine in hospitalized patients with asymptomatic severe hypertension. *Am J Hypertens*. 2022;35(5):433-440.

Patel KK, Young L, Howell EH, et al. Characteristics and outcomes of patients presenting with hypertensive urgency in the office setting. *JAMA Intern Med*. 2016;176(7):981-988.

Viera AJ. Hypertension update: hypertensive emergency and asymptomatic severe hypertension. *FP Essent*. 2018;469:16-19.

Item 20

ANSWER: E

Pruritic annular scalp lesions with hair loss, scale, and tender lymphadenopathy should prompt a diagnosis of tinea capitis, a relatively common pediatric fungal infection with a prevalence of 0%–19% in school-aged children.

The preferred therapy for tinea capitis is oral terbinafine or griseofulvin (SOR B). The shortest course is terbinafine at 2 weeks and it is effective for most causes of tinea capitis. Griseofulvin is more expensive and requires a longer course of treatment. Second-line therapies include fluconazole and itraconazole. Depending on the formulation, these can require 3–12 weeks of treatment.

Fungal cultures can be negative if patients have used emollients or oils in the week prior to testing, and waiting for a culture to return will delay treatment. Fluocinonide solution is a treatment for seborrheic dermatitis, eczema, or psoriasis but is ineffective in tinea capitis. Treatment with topical antifungals alone is ineffective because topical treatments do not penetrate the hair shafts where the dermatophyte infection occurs. However, the use of topical antifungals in conjunction with the oral antifungal can speed resolution.

References

Chen X, Jiang X, Yang M, et al. Systemic antifungal therapy for tinea capitis in children. *Cochrane Database Syst Rev*. 2016;2016(5):CD004685.

Choosing wisely recommendations: don't treat tinea capitis with topical medications only. American Family Physician. 2021.

Heath CR, Usatine RP. Dx across the skin color spectrum: tinea capitis. *J Fam Pract*. 2022;71(8):370-371.

Nguyen CV, Collier S, Merten AH, Maguiness SM, Hook KP. Tinea capitis: a single-institution retrospective review from 2010 to 2015. *Pediatr Dermatol*. 2020;37(2):305-310.

Item 21

ANSWER: C

Exclusively breastfeeding infants for at least 6 months confers multiple health benefits to both the mother and the infant. Breastfeeding persons have decreased risks for breast and ovarian cancers, postpartum depression, hypertension, cardiovascular disease, and type 2 diabetes. Breastfed infants have decreased risks for atopic dermatitis and gastroenteritis. Other potential infant benefits, based on observational studies, include lower risks for childhood leukemia, hypertension, obesity, otitis media, sudden infant death syndrome, and type 1 and 2 diabetes.

Reference

Westerfield KL, Koenig K, Oh R. Breastfeeding: common questions and answers. *Am Fam Physician*. 2018;98(6):368-376.

Item 22

ANSWER: B

Varicoceles appear and feel like a "bag of worms" on palpation and are usually located in the left scrotum. This condition is benign and does not require treatment. However, varicoceles can cause low sperm count and contribute to infertility. The differential diagnosis of scrotal mass includes varicocele, testicular cancer, epididymitis, inguinal hernia, hydrocele, and epidermoid cyst.

References

Butani VRJ. Enlarging scrotal mass. *Am Fam Physician*. 2022;106(5):571-572.

Langan RC, Puente MEE. Scrotal masses. *Am Fam Physician*. 2022;106(2):184-189.

Item 23

ANSWER: D

This patient's case is highly concerning for acute pulmonary embolism. She has a high (>50%) pretest probability of a pulmonary embolus based on both the Wells criteria and Geneva score. Patients with a high pretest probability of pulmonary embolism should have CT angiography (CTA) as the initial test, while patients with a low to intermediate risk should start with a D-dimer level. An arterial blood gas measurement may be helpful but is less likely to yield the specific diagnosis. Echocardiography may be part of the evaluation of pulmonary embolus if there are signs of heart strain, but it is not the most appropriate next step. A ventilation-perfusion (V/Q) scan is less sensitive and specific than CTA and takes longer to perform, but it would be indicated if CTA is contraindicated or not available.

Reference

Lim W, Le Gal G, Bates SM, et al. American Society of Hematology 2018 guidelines for management of venous thromboembolism: diagnosis of venous thromboembolism. *Blood Adv*. 2018;2(22):3226-3256.

Item 24

ANSWER: B

A >20 mm Hg decrease in systolic blood pressure 3 minutes after moving from supine to standing indicates orthostatic hypotension, whereas an increase in pulse rate >0.5 bpm/mm Hg is consistent with a nonneurogenic cause. This patient has lost a considerable amount of weight and anti-obesity medications are a common etiology of hypotension in this setting. When this occurs, treatments for other comorbidities may need to be adjusted. While midodrine is appropriate to alleviate the symptoms of orthostatic hypotension if no other causes can be found, discontinuing this patient's antihypertensive is a more appropriate first step. Escitalopram is not a common cause of orthostatic hypotension. The patient is tolerating semaglutide and losing an appropriate amount of weight, so discontinuing it is not an appropriate step. GLP-1 receptor agonists can rarely cause a slight increase in heart rate, but not to the degree seen here. This patient's intention tremor is not consistent with Parkinson disease, and beginning carbidopa/levodopa is not appropriate.

Reference

Kim MJ, Farrell J. Orthostatic hypotension: a practical approach. *Am Fam Physician*. 2022;105(1):39-49.

Item 25

ANSWER: C

According to the U.S. Preventive Services Task Force, statin therapy with a moderate-intensity dosage is recommended for primary prevention of cardiovascular disease (CVD) in adults 40–75 years of age with a CVD risk of ≥10% with 1 or more CVD risk factors such as diabetes mellitus, hypertension, dyslipidemia, or smoking tobacco (B recommendation). Not initiating statin therapy increases the cardiovascular risk for this patient with identified CVD risk factors. Initiating low-intensity statin therapy is not sufficient. This patient does not have any additional risk factors that would require a high-intensity statin and her calculated 10-year risk of CVD is <20%.

Reference

US Preventive Services Task Force. Final recommendation statement: statin use for the primary prevention of cardiovascular disease in adults: preventive medication. August 23, 2022.

Item 26

ANSWER: E

As the number of cross-sectional imaging studies has increased, so have incidental findings. This often creates a dilemma for primary care physicians as they guide their patients toward the most appropriate follow-up of these findings. Adrenal gland incidentalomas are particularly common and concerning as even benign lesions may have hormonal activity. The most current recommendations from the American Association of Clinical Endocrinology and the American College of Radiology suggest that all patients with masses >1 cm should be tested for autonomous cortisol secretion and that patients without a history of malignancy who have lesions >2 cm and <4 cm on initial imaging should have adrenal-specific imaging via either CT or MRI. This patient's history of hypertension, obesity, and prediabetes would also result in a recommendation for testing to rule out hyperaldosteronism.

Reassurance or repeating the study in 1 year would not be appropriate for this particular lesion. Biochemical studies for pheochromocytoma are unnecessary in this patient unless there is clinical suspicion or the dedicated study demonstrates characteristics that make the condition likely. Biopsy of the gland would be appropriate only if suspicious characteristics were identified on adrenal-specific imaging and would generally be done as a surgical procedure, not a needle biopsy.

References

Expert Panel on Urological Imaging; Mody RN, Remer EM, et al. ACR appropriateness criteria adrenal mass evaluation: 2021 update. *J Am Coll Radiol*. 2021;18(11S):S251-S267.

Vaidya A, Hamrahian A, Bancos I, Fleseriu M, Ghayee HK. The evaluation of incidentally discovered adrenal masses. *Endocr Pract*. 2019;25(2):178-192.

Item 27

ANSWER: B

The patient should be presumed to have a scaphoid fracture and treated with a thumb spica splint for up to 8 weeks. An initial plain radiograph may be normal in up to 20% of scaphoid fractures. Radiography can be repeated in 2 weeks if the wrist remains tender. A gutter splint, volar splint, short arm cast, and long arm cast would not be appropriate for treatment of a scaphoid fracture.

Reference

Eiff MP, Hatch R. *Fracture Management for Primary Care*. 3rd ed. Elsevier Saunders; 2018:84-90.

Item 28

ANSWER: D

The 2016 U.S Medical Eligibility Criteria for Contraceptive Use was developed to assist providers in determining the safest forms of contraception for patients with certain health conditions and characteristics, and was updated in 2020 to address contraception use for women at high risk for HIV. In this case, a woman in her 30s desires reversible contraception following an acute stroke in the setting of hypertension. For a person with a history of stroke, combined hormonal contraception carries unacceptable health risks and should not be used. Use of a progestin-containing pill, injection, or subdermal implant carries risks that usually outweigh the benefits. Use of a levonorgestrel IUD carries risks, but the benefit outweighs the risk. However, only a copper IUD has no restriction on use and is considered the safest contraceptive option.

Reference

Reproductive health: US Medical Eligibility Criteria for contraceptive use, 2016 (US MEC). Centers for Disease Control and Prevention. Last reviewed March 27, 2023.

Item 29

ANSWER: B

This patient has oral candidiasis and requires treatment with an antifungal. Medications associated with this diagnosis include antibiotics and inhaled corticosteroids. Additional risk factors include immunocompromise, diabetes mellitus, malnourishment, and use of dentures. If the lesions do not resolve with 2–3 weeks of treatment, a biopsy should be performed to rule out precancerous or cancerous findings.

Reference

Randall DA, Wilson Westmark NL, Neville BW. Common oral lesions. *Am Fam Physician*. 2022;105(4):369-376.

Item 30

ANSWER: C

Colonoscopy is the gold standard for isolating the source of gastrointestinal bleeding. However, this patient is too unstable to tolerate the risk of colonoscopy. The most appropriate option is CT angiography of the abdomen and pelvis to determine the source of bleeding.

Both radiography and ultrasonography of the abdomen would be nonspecific and nondiagnostic. Compared to CT angiography, technetium Tc 99m–labeled red blood cell scintigraphy is less preferred to isolate the source of bleeding. Laparoscopy would be too invasive and risky in this patient, and would likely not isolate the source of bleeding.

References

Hawks MK, Svarverud JE. Acute lower gastrointestinal bleeding: evaluation and management. *Am Fam Physician*. 2020;101(4):206-212.

Sengupta N, Feuerstein JD, Jairath V, et al. Management of patients with acute lower gastrointestinal bleeding: an updated ACG guideline. *Am J Gastroenterol*. 2023;118(2):208-231.

Shah AR, Jala V, Arshad H, Bilal M. Evaluation and management of lower gastrointestinal bleeding. *Dis Mon*. 2018;64(7):321-332.

Item 31

ANSWER: A

Patients with Bell palsy present with acute weakness or paralysis of the face caused by dysfunction of peripheral cranial nerve VII (the facial nerve). A central lesion should be suspected if the patient is able to wrinkle the forehead on the affected side during the examination. This is also true if the patient is able to close both eyes tightly.

While central nervous system lesions such as multiple sclerosis, stroke, or tumor can also cause facial nerve palsy, some motor neurons to the forehead cross sides at the level of the brain stem, so the fibers in the facial nerve going to the forehead come from both cerebral hemispheres. Therefore, central lesions affecting the facial nerve will not paralyze the forehead on the affected side. This causes unilateral facial paralysis with sparing of the forehead.

Expected findings on the affected side in Bell palsy include inability to close the eye, normal extraocular movements, flattening of the nasolabial fold, and drooping of the mouth.

Reference

Dalrymple SN, Row JH, Gazewood J. Bell palsy: rapid evidence review. *Am Fam Physician*. 2023;107(4):415-420.

Item 32

ANSWER: A

Thyrotoxicosis secondary to the overuse of thyroid hormone, as with other causes of hyperthyroidism, has significant adverse effects, including weight loss, diarrhea, and loose stools and more concerning adverse effects including osteoporosis, atrial fibrillation, and, more rarely, high-output heart failure related to the thyroid hormone receptors in bone and heart tissue. Atrial fibrillation may be present in 10%–25% of patients with thyrotoxicosis. Even subclinical hyperthyroidism has been associated with a significantly higher risk for atrial fibrillation. Exophthalmos and goiter do not occur because they are not caused by the thyroid hormone itself. Seizure and tetany are not known effects of thyrotoxicosis.

References

Biondi B, Cooper DS. Subclinical hyperthyroidism. *N Engl J Med*. 2018;378(25):2411-2419.

Lee SY, Pearce EN. Hyperthyroidism: a review. *JAMA*. 2023;330(15):1472-1483.

Item 33

ANSWER: B

Public transportation systems encourage users to walk to stops or through stations, and people are more likely to use public transportation if it is designed to be comfortable and convenient. In contrast, research has shown that people are less likely to walk when everyday destinations are located more than a half-mile away from home. Safety concerns can be a barrier to walking, and high-speed roadways in neighborhoods increase pedestrian risk. Convenient alternatives, such as moving sidewalks and escalators, also discourage walking.

Reference

Office of the Surgeon General (US). Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities. Washington (DC): US Department of Health and Human Services; 2015.

Item 34

ANSWER: C

Transgender women who have undergone vaginoplasty retain the prostate, located anterior to the vagina at the base of the bladder. The prostate is likely to be very small as a result of estradiol therapy and testosterone suppression, and palpation of the prostate through the anterior vaginal wall would be difficult. However, given the preservation of this gland, it is reasonable to offer PSA screening after discussing the sensitivity, specificity, risks, and benefits.

Digital rectal examinations are not recommended for screening. Currently, there are no guidelines for anal Papanicolaou screening.

The U.S. Preventive Services Task Force (USPSTF) recommends mammography for persons who were assigned female at birth. There is limited data to support mammography in transgender women with breast tissue because their breast cancer risk is likely similar to that of cisgender men. It would be reasonable to acknowledge the presence of this tissue and discuss the sensitivity, specificity, risks, and benefits of mammography with this patient, but the USPSTF does not have a stated recommendation for or against this screening.

Bone density screening for cisgender women at normal risk is suggested at age 65, but there are no guidelines for such screening in transgender women, although this patient could be considered at additional risk because she is agonadal.

References

Bachman E, Travison TG, Basaria S, et al. Testosterone induces erythrocytosis via increased erythropoietin and suppressed hepcidin: evidence for a new erythropoietin/hemoglobin set point. *J Gerontol A Biol Sci Med Sci*. 2014;69(6):725-735.

Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgend Health*. 2022;23(suppl 1):S1-S259.

Deutsch MB. Guidelines for the primary and gender-affirming care of transgender and gender nonbinary people; 2nd edition. UCSF Gender Affirming Health Program, Department of Family and Community Medicine, University of California San Francisco. June 17, 2016.

Islam RM, Bell RJ, Green S, Page MJ, Davis SR. Safety and efficacy of testosterone for women: a systematic review and meta-analysis of randomised controlled trial data. *Lancet Diabetes Endocrinol*. 2019;7(10):754-766.

US Preventive Services Task Force. Final recommendation statement: prostate cancer: screening.

Item 35

ANSWER: A

This patient meets the criteria for being at high risk of developing refeeding syndrome (RFS) with a BMI <16 kg/m². In addition to her BMI she has had an unintentional weight loss of >15% in the past 3–6 months, and low levels of potassium and phosphorus prior to therapy. Another major risk factor is little or no nutrition for >10 days. Even patients who have lower risk for RFS than this patient should initially receive as little as 25%–50% of their estimated caloric requirements, and their nutrition gradually increased. Electrolytes, especially magnesium, potassium, and phosphate, should be replenished immediately and closely monitored as calorie initiation will drive these electrolytes intracellularly. Minor risk factors for RFS include a BMI <18.5 kg/m², a weight loss of >10% in the preceding 3–6 months, little or no nutrition for >5 days, and a history of alcohol or drug abuse.

References

Friedli N, Odermatt J, Reber E, Schuetz P, Stanga Z. Refeeding syndrome: update and clinical advice for prevention, diagnosis and treatment. *Curr Opin Gastroenterol*. 2020;36(2):136-140.

Reber E, Friedli N, Vasiloglou MF, Schuetz P, Stanga Z. Management of refeeding syndrome in medical inpatients. *J Clin Med*. 2019;8(12):2202.

Item 36

ANSWER: D

Obstructive sleep apnea is an increasingly recognized possible etiology of lower extremity edema and should be considered during the evaluation of this patient. While the exact pathophysiology is unknown, nocturnal hypoxemia is thought to lead to increased sympathetic tone resulting in systemic hypertension. This nocturnal hypoxemia can lead to neuroendocrine activation and salt and water retention. Celiac disease, Cushing syndrome, Lyme disease, and Raynaud disease are not associated with lower extremity edema.

Reference

Patel H, Skok C, DeMarco A. Peripheral edema: evaluation and management in primary care. *Am Fam Physician*. 2022;106(5):557-564.

Item 37

ANSWER: A

Hydrocortisone is the preferred glucocorticoid for replacement therapy of adrenal insufficiency, and the goal of treatment is to use the lowest dosage of glucocorticoids to control symptoms. After initial replacement, the management of chronic adrenal insufficiency includes assessment of signs and symptoms of under- or overreplacement. This patient has signs and symptoms of underreplacement including fatigue, weight loss, nausea, decreased energy, and difficulty concentrating. Her glucocorticoid dosage should be increased by 2.5–5 mg daily and her symptoms reassessed in 1 week. Measurement of an early morning corticotropin (ACTH) level is helpful in assessing for overreplacement as indicated by a low level; however, an elevated corticotropin level is not necessarily indicative of underreplacement.

Checking a random cortisol level is typically not necessary. A cortisol stimulation test is useful in the diagnosis of adrenal insufficiency but not in monitoring replacement after diagnosis. CT of the adrenal glands can be useful in evaluating the etiology of adrenal insufficiency but not in the ongoing management of glucocorticoid replacement therapy.

References

Bornstein SR, Allolio B, Arlt W, et al. Diagnosis and treatment of primary adrenal insufficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2016;101(2):364-389.

Husebye ES, Allolio B, Arlt W, et al. Consensus statement on the diagnosis, treatment and follow-up of patients with primary adrenal insufficiency. *J Intern Med*. 2014;275(2):104-115.

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

Item 38

ANSWER: D

The HINTS (head-impulse, nystagmus, test of skew) examination can help determine whether the etiology of vertigo is peripheral or central. When performed by trained clinicians, it is highly sensitive and specific in identifying central causes such as acute stroke. For a test of skew the patient looks straight ahead while each eye is covered and uncovered. Vertical deviation of a covered eye after uncovering suggests a central etiology. Findings that are suggestive of peripheral causes of vertigo include spontaneous nystagmus that is unidirectional and horizontal, suppression of nystagmus with visual fixation, and saccade (rapid movement of both eyes where the gaze overcorrects to keep focused on the examiner) when the patient's head is thrust 10° to the right and left while the patient's eyes are fixed on the examiner's nose.

Reference

Muncie HL, Sirmans SM, James E. Dizziness: approach to evaluation and management. *Am Fam Physician*. 2017;95(3):154-162.

Item 39

ANSWER: D

According to the U.S. Preventive Services Task Force (USPSTF), primary care clinicians should evaluate women individually for their family history of breast, ovarian, tubal, and peritoneal cancers with a familial risk assessment tool. Patients with a positive risk score should be recommended for genetic counseling (B recommendation). The USPSTF recommends against teaching patients breast self-examination due to a lack of supporting evidence confirming a benefit of breast cancer detection. Neither screening mammography nor ultrasonography are recommended without anatomic abnormalities indicating further examination at this age.

References

Khan M, Chollet A. Breast cancer screening: common questions and answers. *Am Fam Physician*. 2021;103(1):33-41.

US Preventive Services Task Force. Final recommendation statement: BRCA-related cancer: risk assessment, genetic counseling, and genetic testing. Updated August 20, 2019.

US Preventive Services Task Force. Final recommendation statement: breast cancer: screening. Updated April 30, 2024.

Item 40

ANSWER: C

This patient's symptoms and the physical examination findings are classic for ulnar nerve compression at the elbow, also known as cubital tunnel syndrome. Numbness and tingling in the ring and little fingers, weakness in grip, and clawing of the fingers are all indicative of ulnar nerve dysfunction. A positive Tinel sign over the medial epicondyle further strengthens the diagnosis of cubital tunnel syndrome. Early diagnosis and treatment are crucial to prevent permanent nerve damage.

Axillary nerve compression would produce paresthesias or pain of the lateral shoulder and weakness in external shoulder rotation, extension, abduction, and forward flexion. Carpal tunnel syndrome affects the median nerve, not the ulnar nerve, and causes numbness and tingling in the thumb, index finger, middle finger, and half of the ring finger. Median nerve neuropathy would cause symptoms similar to carpal tunnel syndrome, but not weakness of the first dorsal interosseous muscle or clawing of the fingers. Radial tunnel syndrome affects the radial nerve and causes weakness and sensory loss in the back of the hand and thumb.

Reference
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 41

ANSWER: A

Current guidelines recommend correction of the serum sodium level by 4–6 mEq/L within 1–2 hours, which can reverse hyponatremic encephalopathy. This may be accomplished with either a 100-mL or 150-mL bolus of 3% sodium chloride administered over 10–20 minutes and repeated 2–3 times until the desired sodium level is achieved.

Reference
Adrogue HJ, Tucker BM, Madias NE. Diagnosis and management of hyponatremia: a review. *JAMA*. 2022;328(3):280-291.

Item 42

ANSWER: A

This patient has iliotibial band syndrome, a common overuse injury in cyclists and runners. Pain occurs due to impingement of the iliotibial band over the lateral femoral epicondyle. The Noble compression test is diagnostic for iliotibial band syndrome and is considered positive if it evokes pain in the area of impingement, as in this patient. Crepitus occurs with osteoarthritis but is not specific, and this patient's history and the examination are more suggestive of iliotibial band syndrome. Patellar tendinitis is more central, usually at the inferior pole of the patella. Patellofemoral syndrome causes diffuse pain without point tenderness. The pes anserine bursa is distal to the medial knee.

Reference
Arnold MJ, Moody AL. Common running injuries: evaluation and management. *Am Fam Physician*. 2018;97(8):510-516.

Item 43

ANSWER: A

The infant mortality rate from accidental suffocation and strangling in bed has increased in recent decades and some of this increase may be due to sudden infant death syndrome. Physicians should counsel expectant parents that it is safest for infants to sleep on their backs in their own cribs on a mattress with a fitted sheet. An infant should sleep in the caregiver's room until 6–12 months of age. Infant suffocation is more common with soft linen when sleeping in the caregiver's bed.

Reference

DeGeorge KC, Neltner CE, Neltner BT. Prevention of unintentional childhood injury. *Am Fam Physician*. 2020;102(7):411-417.

Item 44

ANSWER: A

Addison disease is usually marked by fatigue, weakness, unexplained weight loss, and hyperpigmentation along with low cortisol levels. Hyperpigmentation is the result of elevated levels of melanocyte-stimulating hormone, a cleavage product of corticotropin (ACTH). Cushing disease is the result of excessive cortisol production due to a corticotropin-secreting pituitary adenoma and is marked by weight gain, central obesity, moon facies, buffalo hump, and muscle weakness. Pheochromocytoma is a catecholamine-secreting tumor of the adrenal medulla. It usually presents with episodic symptoms, including hypertension, headache, palpitations, and diaphoresis. Primary hyperaldosteronism is due to excessive aldosterone production leading to sodium retention, potassium loss, and hypertension. Clinical features of primary hyperaldosteronism include hypertension, hypokalemia, and metabolic alkalosis. Syndrome of inappropriate antidiuretic hormone secretion (SIADH) is caused by the inappropriate release of vasopressin despite normal or increased plasma volume and may be triggered by stroke, infection, trauma, medications, pulmonary disease, or HIV. Clinical symptoms of SIADH include confusion, muscle weakness, tremor, muscle cramps, hallucinations, seizures, and death.

References
Bancos I, Prete A. Approach to the patient with adrenal incidentaloma. *J Clin Endocrinol Metab*. 2021;106(11):3331-3353.

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

Charoensri S, Bashaw L, Dehmlow C, Ellies T, Wyckoff J, Turcu AF. Evaluation of a best-practice advisory for primary aldosteronism screening. *JAMA Intern Med*. 2024;184(2):174-182.

Kumar R, Wassif WS. Adrenal insufficiency. *J Clin Pathol*. 2022;75(7):435-442.

Item 45

ANSWER: B

Hearing loss is associated with dementia, decreased quality of life, depression, debility, delirium, falls, and mortality. It does not increase the risk for benign paroxysmal positional vertigo, ear infection, heart failure, or temporomandibular joint dysfunction.

Reference
Michels TC, Duffy MT, Rogers DJ. Hearing loss in adults: differential diagnosis and treatment. *Am Fam Physician*. 2019;100(2):98-108.

Item 46

ANSWER: D

There is a high suspicion for endometriosis in this patient who desires pregnancy. She has classic symptoms, including painful menses and early menarche, and she is now experiencing infertility. Her symptoms improved with oral contraceptive treatment in the past. Laparoscopic surgery can assist with both diagnosis and treatment. Given that the patient desires pregnancy, a trial of oral contraceptive therapy and placement of a levonorgestrel-releasing IUD are not appropriate. While aromatase inhibitor therapy such as letrozole may be considered in the future, a complete infertility workup, including evaluation for male factor infertility, should be completed first.

Reference
Edi R, Cheng T. Endometriosis: evaluation and treatment. *Am Fam Physician*. 2022;106(4):397-404.

Item 47

ANSWER: A

This patient has an abdominal aortic aneurysm (AAA) that may have ruptured. Tobacco use (in the form of cigarette smoking) is the greatest risk factor for developing AAA. Current U.S. Preventive Services Task Force guidelines recommend one-time abdominal screening ultrasonography for all men ages 65–75 who have ever smoked. Additional risk factors include hypertension, male sex, stroke, a family history of AAA, obesity, coronary artery disease, peripheral artery disease, and age >65.

Reference

Haque K, Bhargava P. Abdominal aortic aneurysm. *Am Fam Physician*. 2022;106(2):165-172.

Item 48

ANSWER: E

Cluster headache is a type of primary headache in the category of trigeminal autonomic cephalgia, and abortive therapy consists of 100% high-flow oxygen and triptans. Its typical onset is age 30 and it is 2–3 times more common in males than females. The pain is severe and unilateral in the orbital, supraorbital, or temporal locations. It is associated with at least one of the following symptoms on the ipsilateral side: conjunctival injection or lacrimation, nasal congestion or rhinorrhea, miosis or ptosis, eyelid swelling, and sweating of the forehead and face. The pain can last from 30 minutes to almost 3 hours. Hydromorphone and ketorolac can be used to mask other types of pain but are ineffective in stopping cluster headache. Ondansetron stops vomiting, but its side effects include headache. Propranolol can be used to prevent migraine.

References

Headache Classification Committee of the International Headache Society (IHS). The international classification of headache disorders, 3rd edition. *Cephalalgia*. 2018;38(1):1-211.

Malu OO, Bailey J, Hawks MK. Cluster headache: rapid evidence review. *Am Fam Physician*. 2022;105(1):24-32.

Manzoni GC, Taga A, Russo M, Torelli P. Age of onset of episodic and chronic cluster headache-a review of a large case series from a single headache centre. *J Headache Pain*. 2016;17:44.

May A. Cluster headache: pathogenesis, diagnosis, and management. *Lancet*. 2005;366(9488):843-855.

Ray JC, Stark RJ, Hutton EJ. Cluster headache in adults. *Aust Prescr*. 2022;45(1):15-20.

Item 49

ANSWER: B

Exposure to UV light is known to increase the risk for skin cancer. UV rays are strongest from 10:00 a.m. to 4:00 p.m., so going to the pool in the early morning will reduce exposure. The FDA does not recommend the use of sunscreen in infants under 6 months of age. Children under 6 months of age should be kept out of direct sunlight. UV rays still damage skin on cloudy days. Hats should shade the ears and the back of the neck as well as the face, so a baseball cap is not a good choice.

References

Skin cancer: sun safety facts. Centers for Disease Control and Prevention. May 3, 2024.

Sun safety: information for parents about sunburn & sunscreen. American Academy of Pediatrics. Updated November 20, 2023.

Item 50

ANSWER: E

The correct treatment of a deep vein thrombosis (DVT) in a patient with antiphospholipid syndrome is warfarin. Most DVTs can be treated with a direct oral anticoagulant (DOAC). DOACs may be acceptable in low-risk patients with a single previous DVT, but they are not preferred for patients with antiphospholipid antibody syndrome due to the risk for increased arterial thrombotic events. Aspirin is clearly not appropriate in a patient with recurrent DVTs. Clopidogrel would never be indicated for the treatment of a DVT. If this patient were pregnant, enoxaparin would be preferred. Thrombophilia evaluation should not be considered in patients with a provoked venous thromboembolism (VTE). However, in select patients with recurrent VTE, evaluation should be considered, specifically when the results of the testing would influence the treatment plan (SOR A). Thrombophilia testing may be considered in patients who are interested in stopping anticoagulation because of concerns such as bleeding risk, intolerance, or cost. These patients include those with an initial VTE before age 50, a history of recurrent pregnancy loss, a first-degree relative who had an initial VTE before 50 years of age, recurrent VTEs, arterial and venous thrombi, or VTE in an unusual site.

References

Khairani CD, Bejjani A, Piazza G, et al. Direct oral anticoagulants vs vitamin K antagonists in patients with antiphospholipid syndromes: meta-analysis of randomized trials. *J Am Coll Cardiol*. 2023;81(1):16-30.

Mount HR, Rich M, Putnam MS. Recurrent venous thromboembolism. *Am Fam Physician*. 2022;105(4):377-385.

Item 51

ANSWER: B

Infantile hemangiomas are the most common benign tumors in childhood, and are mostly small and self-resolving. However, patients with large lesions, lesions >2 mm above the skin, or lesions near the eyes, ears, and nose are considered to be at high risk for disfigurement.

First-line treatment includes oral propranolol hydrochloride, 2–3 mg/kg daily. Alternative treatments include topical timolol 0.5% gel-forming solution, twice daily, and high-potency corticosteroids such as clobetasol propionate 0.05%, but not hydrocortisone 0.5%. Embolization and excisional surgery are reserved for select cases in which medical treatment has failed.

References

Hoover L. Infantile hemangioma: AAP releases guideline for management. *Am Fam Physician*. 2019;100(3):186-187.

Sebaratnam DF, Rodriguez Bandera AL, Wong L-CF, Wargon O. Infantile hemangioma. Part 2: management. *J Am Acad Dermatol*. 2021;85(6):1395-1404.

Item 52

ANSWER: C

Antidepressant monotherapy is contraindicated in patients with depression who have mixed features of associated hypomania or mania because it may precipitate or worsen mania. First-line treatment is mood stabilizers such as lithium, anticonvulsants, and antipsychotics.

Reference

Marzani G, Neff AP. Bipolar disorders: evaluation and treatment. *Am Fam Physician*. 2021;103(4):227-239.

Item 53

ANSWER: A

Weakness is a chief concern that is frequently encountered in medical settings, and a careful history and thorough physical examination are critical to developing an appropriate diagnosis. This patient displays features of asymmetric weakness and findings of both upper and lower motor neuron disease, which should lead to a clinical suspicion of amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig disease. ALS is an insidious paralytic disorder that is currently incurable. Upper motor signs include hyperreflexia, dysarthria, clonus, and a positive Babinski sign. Lower motor signs include muscle atrophy and hyporeflexia or areflexia.

Guillain-Barré syndrome is an acute neuromuscular disorder characterized by ascending muscle weakness and lower motor neuron signs that may progress to include the respiratory muscles. While hypothyroidism may lead to hyporeflexia, it is unlikely to lead to the other physical examination findings in this case. Multiple sclerosis can have a variable presentation and may display signs of unilateral weakness and upper motor neuron signs depending on the location of the lesion. Myasthenia gravis is characterized by proximal weakness that progresses throughout the day, often includes ocular muscles, and displays lower motor neuron signs.

References

Brown RH, Al-Chalabi A. Amyotrophic lateral sclerosis. *N Engl J Med*. 2017;377(2):162-172.

Larson ST, Wilbur J. Muscle weakness in adults: evaluation and differential diagnosis. *Am Fam Physician*. 2020;101(2):95-108.

Item 54

ANSWER: B

There is no need for imaging or further workup to determine the cause of pain in this patient with uncomplicated temporomandibular joint dysfunction with muscle spasms. The initial treatment is naproxen for inflammation and pain, as well as cyclobenzaprine for muscle spasms. Scheduling a follow-up visit without treatment is not appropriate in a patient with a clear diagnosis and available medications that can safely provide relief. A referral to either an otolaryngologist or a maxillofacial surgeon should be deferred until a trial of medication is completed.

Reference

Matheson EM, Fermo JD, Blackwelder RS. Temporomandibular disorders: rapid evidence review. *Am Fam Physician*. 2023;107(1):52-58.

Item 55

ANSWER: E

Cryptorchidism is the most common genitourinary malformation in male children, and primary care physicians play a key role in the early identification of this condition. The next step in management would be referral to a urologist (SOR C). Reassuring the parents that the patient's condition will spontaneously resolve is not sufficient. If the testicle were located in the upper scrotum or lower inguinal canal, then an annual examination to ensure spontaneous resolution would be acceptable. If the patient had bilateral undescended testicles that were nonpalpable, then referral to an endocrinologist would be the most appropriate next step. Imaging is not recommended before consultation with a surgical specialist (SOR C). After surgery, patients need lifelong surveillance and counseling regarding fertility implications and increased risk for testicular conditions.

Reference

Nguyen V, Ngo L, Jaqua EE. Cryptorchidism (undescended testicle). *Am Fam Physician*. 2023;108(4):378-385.

Item 56

ANSWER: B

Up to 90% of cases of pharyngitis in adults are viral in etiology. The patient in this clinical scenario, however, has a high clinical likelihood of group A β-hemolytic streptococcal (GABS) pharyngitis, as she meets 4 of the 5 Modified Centor Criteria (fever, hyperemic/exudative tonsillitis, cervical adenopathy, and absence of cough). Antibiotic treatment is recommended to reduce communicability, relieve symptoms, and help prevent rheumatic fever (SOR C). Antibiotic treatment for GABS pharyngitis does not lower the risk for acute poststreptococcal glomerulonephritis. The use of the Modified Centor Criteria for acute pharyngitis is endorsed by both the American Academy of Family Physicians and the American College of Physicians.

Reference

Zoorob R, Sidani MA, Fremont RD, Kihlberg C. Antibiotic use in acute upper respiratory tract infections. *Am Fam Physician*. 2012;86(9):817-822.

Item 57

ANSWER: A

Family physicians should be familiar with medications contraindicated in pregnancy that are commonly used by women of reproductive age. Topical adapalene, along with other retinoids, is contraindicated in pregnancy due to lack of safety data and known harm from oral formulations. Famotidine, fluticasone propionate, hydroxyzine, and polyethylene glycol are generally considered safe in all trimesters of pregnancy.

Reference

Powers EA, Tewell R, Bayard M. Over-the-counter medications in pregnancy. *Am Fam Physician*. 2023;108(4):360-369.

Item 58

ANSWER: D

In general, helmets and pads should remain in place during transportation after a football injury requiring neck stabilization. The facemask may be removed with a special tool if there are airway issues or loss of consciousness. If the athlete's injuries require either the helmet or pads to be removed, both should be removed by a trained team. Removal of only one can cause hyperflexion or hyperextension of the neck.

References

Mills BM, Conrick KM, Anderson S, et al. Consensus recommendations on the prehospital care of the injured athlete with a suspected catastrophic cervical spine injury. *J Athl Train*. 2020;55(6):563-572.

Usman S. Management of head and neck injuries by the sideline physician. *Am Fam Physician*. 2022;106(5):543-548.

Item 59

ANSWER: B

While respecting the patient's autonomy and confidentiality is important, ethical obligations also extend to ensuring her well-being and safety, and accurately maintaining the medical record. Encouraging open communication with parents can foster trust and support, but forcing it might create a harmful environment. Offering counseling and contraceptive options while advocating for open communication allows the physician to foster patient autonomy as well as uphold responsible guidance. This approach aligns with ethical guidelines from the American Academy of Pediatrics that emphasize respect for minors' confidentiality while considering parental involvement in sensitive situations.

Reference

Committee on Adolescence; Braverman PK, Adelman WP, et al. Contraception for adolescents. *Pediatrics*. 2014;134(4):e1244-e1256.

Item 60

ANSWER: E

This patient has been diagnosed with a minor noncardioembolic ischemic stroke and should be treated with dual antiplatelet therapy with aspirin and clopidogrel for 21–90 days post stroke (SOR A). The benefit of reducing recurrent stroke risk outweighs the risk for major bleeding. Using aspirin and clopidogrel longer than 90 days offers no additional benefit but results in significantly increased bleeding risk compared to using single antiplatelet therapy. Following 21–90 days post stroke, either aspirin monotherapy or aspirin in combination with dipyridamole may be used indefinitely. If a cardioembolic source is later diagnosed, appropriate anticoagulation therapy with a direct oral anticoagulant or vitamin K antagonist, such as warfarin, can be initiated. Low-molecular-weight heparin does not play a role in secondary stroke prevention.

Reference

Larson ST, Ray BE, Wilbur J. Ischemic stroke management: posthospitalization and transition of care. *Am Fam Physician*. 2023;108(1):70-77.

Item 61

ANSWER: D

The α-blocker prazosin can be effective in the treatment of midsleep awakening due to hyperarousal or nightmares by decreasing sympathetic nervous tone. Due to their toxicity profiles, tricyclic antidepressants such as amitriptyline are usually not initiated in patients with posttraumatic stress disorder (PTSD) until multiple first-line treatments have failed. Benzodiazepines such as clonazepam are generally avoided in patients with PTSD due to potential misuse and chronic long-term effects. SSRIs such as fluoxetine and SNRIs such as venlafaxine are the most effective pharmacologic treatments for overall reduction of PTSD symptoms. However, they are not used specifically for nighttime trauma-related nightmares.

Reference

Sartor Z, Kelley L, Laschober R. Posttraumatic stress disorder: evaluation and treatment. *Am Fam Physician*. 2023;107(3):273-281.

Item 62

ANSWER: A

This patient had a simple febrile seizure that has ended, and antiseizure medication is not recommended. Routine laboratory examinations, imaging, and electroencephalography are not recommended in simple febrile seizures. Benzodiazepines can be used in patients who are actively seizing for longer than 5 minutes, but this patient's seizure has ended.

Reference

Smith DK, Sadler KP, Benedum M. Febrile seizures: risks, evaluation, and prognosis. *Am Fam Physician*. 2019;99(7):445-450.

Item 63

ANSWER: D

This patient is at increased risk for cardiovascular disease (CVD) due to his hypertension, family history, elevated BMI, and smoking history. According to the U.S. Preventive Services Task Force (USPSTF) recommendations for the primary prevention of CVD, adults with CVD risk factors should be referred to behavioral counseling interventions to promote a healthy diet and physical activity. The USPSTF recommends shared decision-making for low-dose aspirin for the primary prevention of CVD in patients 40–59 years of age who have a 10% or greater 10-year risk of CVD. The USPSTF recommends statin therapy for the primary prevention of CVD in patients 40–75 years of age who do not have a history of CVD but do have ≥1 CVD risk factors plus a 10-year CVD risk of 7.5%–10%. The USPSTF does not make a recommendation for a specific exercise program.

Reference

US Preventive Services Task Force. Final recommendation statement: healthy diet and physical activity for cardiovascular disease prevention in adults with cardiovascular disease risk factors: behavioral counseling interventions. Updated November 24, 2020.

Item 64

ANSWER: B

Graduated compression stockings are the mainstay of treatment for chronic venous insufficiency. The compression is generally highest at the ankle with decreasing pressures at the calf. While compression stockings with <20 mm Hg tension may be helpful for comfort, they are not considered adequate for venous insufficiency. Insufficiency significant enough to cause venous ulcers should be treated with 30–40 mm Hg pressure stockings, which have been shown to be effective for >90% of ulcers if a patient is 70%–80% compliant with usage. Varicosities with swelling and discomfort may be helped by 20–30 mm Hg pressure compression stockings. Compression stockings with >50 mm Hg of pressure are not as well tolerated and are generally used in patients with lymphedema. Unna boots have significant variability of pressures and are not generally recommended for this condition.

References

Dahm KT, Myrhaug HT, Stromme H, Fure B, Brurberg KG. Effects of preventive use of compression stockings for elderly with chronic venous insufficiency and swollen legs: a systematic review and meta-analysis. *BMC Geriatr*. 2019;19(1):76.

Eberhardt RT, Raffetto JD. Chronic venous insufficiency. *Circulation*. 2014;130(4):333-346.

Item 65

ANSWER: C

Hypocalcemia causes generalized neuromuscular irritability, leading to peripheral symmetric paresthesias and muscle spasms that can cause tetany, extrapyramidal symptoms, and seizures. Hypocalcemia can cause QTc prolongation, heart block, and bronchospasm. It can also lead to complications of hypercalciuria such as nephrolithiasis and can trigger psychiatric conditions including anxiety and mania. Hypocalcemia does not cause hypertension, respiratory suppression, or tachycardia. Constipation is more associated with hypercalcemia.

Reference

Pepe J, Colangelo L, Biamonte F, et al. Diagnosis and management of hypocalcemia. *Endocrine*. 2020;69(3):485-495.

Item 66

ANSWER: B

In patients who have had a myocardial infarction, chronic mitral regurgitation can develop as a consequence of left ventricular remodeling related to myocardial ischemia. Chronic mitral regurgitation develops gradually and symptoms that are initially mild can progress. In the case of acute chordae tendineae rupture, mitral regurgitation occurs suddenly, and the patient develops acute pulmonary edema and is often hemodynamically unstable.

A chronic mitral regurgitation murmur is typically grade 3–4/6 and holosystolic. It usually obscures S1 and radiates to the axilla, and it is loudest when the patient is supine.

An aortic stenosis murmur is a decrescendo murmur, usually grade 2–3/6, loudest at the aortic area or right upper sternal border, and radiates to the clavicle or neck. A mitral stenosis murmur is a subtle diastolic "rumble" in the left fifth intercostal space, lateral to the nipple, and best heard in the left lateral decubitus position. In a patient with pericardial effusion, heart sounds are generally muffled without a distinct murmur. Isolated tricuspid regurgitation is uncommon and exhibits a high-pitched softer holosystolic murmur that is best heard at the left lower sternal border and radiates to the right sternal border.

Reference

O'Gara PT, Loscalzo J. Approach to the patient with a heart murmur. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 1. 21st ed. McGraw Hill; 2022:278-286.

Item 67

ANSWER: B

Diagnosing acute HIV infection has substantial implications for both the individual and for public health, as the infection will be easy to spread during this time. In a person who has a sudden onset of an ill-defined mononucleosis-like syndrome and/or aseptic meningitis, acute HIV infection should be in the differential diagnosis along with mononucleosis, cytomegalovirus, toxoplasmosis, rubella, viral hepatitis, disseminated gonococcal infection, and other viral illnesses.

Mucocutaneous ulcer is unusual in most of these conditions and should arouse suspicion. Skin rash is uncommon in mononucleosis, visceral larva migrans, and toxoplasmosis, and tends to spare the palms and soles in rubella. The abrupt onset of symptoms, pharyngeal edema without tonsillar enlargement or exudates, and diarrhea all help to distinguish acute HIV from mononucleosis. A positive heterophile antibody test can occur in acute HIV infection, and atypical lymphocytes can be seen in both. Negative results of the rapid enzyme-linked immunosorbent assay (ELISA) or Western blot test early in the course of illness can be misleading, as the antibody response is not detected until 3–7 weeks after infection. Newer fourth-generation tests further reduce this period of false-negative serologic tests to 2−4 weeks. However, individuals such as this with acute HIV infection have a markedly elevated viral load easily detected by regular viral tests.

The utility of serologic testing such as IgM for infection with herpes simplex virus is limited due to low specificity and high false-positive rates. It would be inappropriate or harmful to initiate prednisone in the setting of an undiagnosed infection, with rare exceptions such as stress-dose corticosteroids for critical illness. While a skin biopsy may provide information to the clinician to prompt consideration of acute HIV in the differential diagnosis, it would be more expedient to establish the diagnosis and initiate treatment without subjecting this individual to a biopsy.

References

Goldschmidt R, Chu C. HIV infection in adults: initial management. *Am Fam Physician*. 2021;103(7):407-416.

Simonetti F, Dewar R, Maldarelli F. Diagnosis of human immunodeficiency virus infection. In: Bennett JE, Dolin R, Blaser MJ, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. Vol 2. 9th ed. Elsevier; 2020:1619-1641.

Item 68

ANSWER: B

According to recommendations from the U.S. Preventive Services Task Force (USPSTF), females ≤24 years of age who are sexually active should be screened for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections. A urine nucleic acid amplification test (NAAT) is recommended for screening. The USPSTF does not recommend asymptomatic screening for bacterial vaginosis or infection with *Mycoplasma genitalium*. The USPSTF recommends against routine serologic screening for infection with genital herpes simplex virus in asymptomatic adolescents and adults. HPV testing screens for cervical cancer but is not recommended for patients under 21 years of age.

References

US Preventive Services Task Force. Final recommendation statement: cervical cancer: screening. Updated August 21, 2018.

US Preventive Services Task Force. Final recommendation statement: Chlamydia and gonorrhea: screening. Updated September 14, 2021.

US Preventive Services Task Force. Final recommendation statement: genital herpes infection: serologic screening. Updated February 14, 2023.

US Preventive Services Task Force. Final recommendation statement: syphilis infection in pregnant women: screening. Updated September 4, 2018.

Item 69

ANSWER: D

Fibromyalgia is a chronic pain syndrome associated with the disordered processing of pain. It affects approximately 2% of people in the United States, and women are diagnosed 2–14 times more frequently than men. While patient education, exercise, and cognitive behavioral therapy can improve pain and functioning (SOR A), nonpharmacologic measures often do not provide sufficient symptom relief. Pharmacologic agents with proven benefit to treat fibromyalgia pain include pregabalin, amitriptyline, duloxetine, and milnacipran (SOR A). Pregabalin reduces pain by up to 50% with a number needed to treat of 10. There is insufficient evidence to recommend acetaminophen and gabapentin. NSAIDs and opioids do not have demonstrated benefits. An adequate trial consists of a single medication that is started at a low dosage, slowly increased until a therapeutic dosage is achieved, and maintained for at least 3 months. Satisfactory treatment should be continued for at least 12 months.

Reference
Winslow BT, Vandal C, Dang L. Fibromyalgia: diagnosis and management. *Am Fam Physician*. 2023;107(2):137-144.

Item 70

ANSWER: D

The transfusion of blood products, specifically RBCs, is a common medical procedure. The transfusion threshold of RBCs for most adults is a hemoglobin level ≤7–8 g/dL (SOR A). However, a slightly less restrictive transfusion threshold of a hemoglobin level ≤8 g/dL should be used for patients who have preexisting cardiovascular disease or are undergoing orthopedic or cardiac surgery, such as a patient who underwent cardiac bypass surgery 3 days ago (SOR C).

Patients with sickle cell disease should not receive transfusions for chronic anemia or uncomplicated pain crisis without an appropriate clinical indication, and not to a higher threshold than regular adults (SOR C). A restrictive transfusion threshold of a hemoglobin level ≤7 g/dL should be used for hospitalized adult patients who are hemodynamically stable, including those who are critically ill (SOR C).

Reference
Raval JS, Griggs JR, Fleg A. Blood product transfusion in adults: indications, adverse reactions, and modifications. *Am Fam Physician*. 2020;102(1):30-38.

Item 71

ANSWER: B

QTc prolongation is a very rare but serious complication of methadone treatment. Expert organizations recommend obtaining a baseline EKG in patients with other risk factors. Although the optimal strategy for patients with a QTc interval ≥500 milliseconds is debated, physicians should review risks and discuss alternatives to other QTc prolongation medications. If the risk of continuing methadone outweighs the high-risk potential for opioid overdose with methadone discontinuation, alternatives to methadone can be pursued.

Reference
Taylor JL, Samet JH. Opioid use disorder. *Ann Intern Med*. 2022;175(1):ITC1-ITC16.

Item 72

ANSWER: E

While lymphadenopathy is generally self-limited with a benign etiology, lymphadenopathy at the supraclavicular, popliteal, and iliac locations is abnormal. Epitrochlear nodes >5 mm in diameter are also abnormal. Because it is associated with a high risk for intra-abdominal malignancy, supraclavicular lymphadenopathy should be evaluated immediately. This applies to both adults and children although patients >40 years of age are at highest risk. Studies indicate that 34%–50% of these patients with supraclavicular lymphadenopathy have malignancy.

Infection is a common cause of anterior cervical, posterior cervical, submental, and submandibular lymphadenopathy. Axillary lymphadenopathy is commonly caused by infections or injuries of the upper extremities. Many healthy adults have inguinal lymphadenopathy.

Reference

Gaddey HL, Riegel AM. Unexplained lymphadenopathy: evaluation and differential diagnosis. *Am Fam Physician*. 2016;94(11):896-903.

Item 73

ANSWER: E

Family-based therapy is recommended as first-line therapy for anorexia nervosa in adolescents and some young adults. Studies have shown that family-based therapy results in higher remission rates and weight gain than individual therapy such as self-guided treatment, cognitive behavioral therapy, focal psychodynamic psychotherapy, and interpersonal psychotherapy. Family-based therapy avoids assigning blame and instead focuses on uniting the family against the disorder. Initially, parents take the lead in promoting healthy eating behaviors as the patient slowly gains greater autonomy in feeding. The therapy improves family communication and leads to patient independence.

Reference

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

Item 74

ANSWER: E

The U.S. Preventive Services Task Force recommends annual screening for lung cancer with low-dose CT for patients between the ages of 50 and 80 who have more than a 20-pack-year smoking history and either currently smoke or quit smoking within the past 15 years. This patient has a 47-pack-year smoking history, so screening is appropriate. Neither screening urinalysis nor screening EKG is recommended in this asymptomatic patient. This patient has a history of tubular adenomas so additional colon cancer screening should be with a colonoscopy, not stool DNA testing. Cervical cancer screening occurs until age 65.

References

Langan RC, Goodbred AJ. Pulmonary nodules: common questions and answers. *Am Fam Physician*. 2023;107(3):282-291.

US Preventive Services Task Force. Final recommendation statement: asymptomatic bacteriuria in adults: screening. Updated September 24, 2019.

US Preventive Services Task Force. Final recommendation statement: cardiovascular disease risk: screening with electrocardiography. Updated June 12, 2018.

US Preventive Services Task Force. Final recommendation statement: colon cancer: screening. Updated May 18, 2021.

US Preventive Services Task Force. Final recommendation statement: lung cancer: screening. Updated March 9, 2021.

Item 75

ANSWER: B

Furosemide is the loop diuretic of choice for removing excess extracellular fluid volume in chronic kidney disease. It has a wide margin of safety and will achieve some degree of natriuresis in even the most severe renal failure. Other diuretics have relatively little effect.

References
Barman JM, Skorecki K. Chronic kidney disease. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 2. 21st ed. McGraw Hill; 2022:2309-2320.

Brunton LL, ed. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*. 11th ed. McGraw-Hill; 2006:753.

Item 76

ANSWER: B

This patient has choledocholithiasis with either a retained stone or, more likely, a recurrent stone following cholecystectomy. She has jaundice and her hepatic function tests demonstrate a cholestatic pattern: an AST to ALT ratio <1.5, suggesting an extrahepatic blockage; an elevated alkaline phosphatase level greater than the ALT and AST levels; and an elevated gamma-glutamyl transferase level. Cholangitis would cause a similar elevation but would be accompanied by an increased WBC count. Metabolic dysfunction–associated steatohepatitis (formerly known as nonalcoholic steatohepatitis) and oral contraceptives would be unlikely to cause pain. Stricture is far less likely than a stone.

References
Cianci P, Restini E. Management of cholelithiasis with choledocholithiasis: endoscopic and surgical approaches. *World J Gastroenterol*. 2021;27(28):4536-4554.

Hall P, Cash J. What is the real function of the liver 'function' tests? *Ulster Med J*. 2012;81(1):30-36.

Ng HJ, Nassar AHM. Reinterventions following laparoscopic cholecystectomy and bile duct exploration. A review of prospective data from 5740 patients. *Surg Endosc*. 2022;36(5):2809-2817.

Item 77

ANSWER: E

This toddler's delay in speech and language development is a common impairment that affects 1 in 8 children in the United States. School-aged children with speech and language delays are at greater risk for difficulty learning to read, putting them at risk for less skilled jobs in adulthood. The development of speech and language occurs in the first 6 months of life and is marked by distinct milestones according to age. Because exposure to language in early childhood influences a child's language mastery, parents and caregivers play an important role in the development of speech and language.

When patients present with concerning signs for delays in speech and language development, early referrals for additional evaluation and treatment can mitigate the adverse effects on academic and social development. A large study found that the most important risk factor for speech and language impairment was male sex. Other risk factors included ongoing hearing problems and birth weight ≤2500 g (5.5 lb). Birth order does not have an adverse association with speech and language development. Children growing up in bilingual households should reach language milestones at the same rate as those in monolingual households.

Reference

Rupert J, Hughes P, Schoenherr D. Speech and language delay in children. *Am Fam Physician*. 2023;108(2):181-188.

Item 78

ANSWER: B

In a patient with microscopic colitis, the most common finding on colonoscopy is normal mucosa. Because the mucosa appears normal, microscopic colitis needs to be diagnosed with biopsy. Granulomas may be found in patients with Crohn disease. Ulcerations are found in ulcerative colitis. Pseudomembranes are found in *Clostridioides difficile* infection. Granulomatous changes and pseudomembranes may also require biopsy for diagnosis.

Reference

Burgers K, Lindberg B, Bevis ZJ. Chronic diarrhea in adults: evaluation and differential diagnosis. *Am Fam Physician*. 2020;101(8):472-480.

Item 79

ANSWER: C

Noninfected wounds caused by clean objects can undergo primary closure up to 18 hours after injury (evidence rating B) without a significant increase in infection rates. Noninfected head wounds can be repaired up to 24 hours after injury. These time parameters should not be used if there are signs of contamination, the laceration length is >5 cm, the laceration is located on the lower extremities, or the patient has diabetes mellitus.

References

Forsch RT, Little SH, Williams C. Laceration repair: a practical approach. *Am Fam Physician*. 2017;95(10):628-636.

Quinn JV, Polevoi SK, Kohn MA. Traumatic lacerations: what are the risks for infection and has the 'golden period' of laceration care disappeared? *Emerg Med J*. 2014;31(2):96-100.

Item 80

ANSWER: D

Hemolytic uremic syndrome (HUS) is a potential serious complication of Shiga toxin–producing *Escherichia coli*. Frequent monitoring of hemoglobin and platelet counts, electrolytes, and BUN and creatinine levels is recommended to detect early manifestations of HUS. The other listed causes of bloody diarrhea (*Campylobacter* bacteria, *Entamoeba histolytica*, *Salmonella* bacteria, and *Shigella* bacteria) are not associated with HUS.

Reference

Shane AL, Mody RK, Crump JA, et al. 2017 Infectious Diseases Society of America clinical practice guidelines for the diagnosis and management of infectious diarrhea. *Clin Infect Dis*. 2017;65(12):1963-1973.

Item 81

ANSWER: C

Several notable changes occur within the maternal cardiovascular system in the first trimester of pregnancy. A rise in cardiac output results from a combination of 3 primary factors: plasma volume expansion that causes an increase in preload, a decrease in afterload that mirrors a decline in systemic vascular resistance, and an increase in the resting heart rate compared to the pre-pregnancy state. Other cardiovascular changes early in the course of pregnancy include a reduction in both systolic and diastolic blood pressures compared to pre-pregnancy measurements.

References

Maternal physiology. In: Cunningham F, Leveno KJ, Dashe JS, Hoffman BL, Spong CY, Casey BM, eds. *Williams Obstetrics*. 26th ed. McGraw-Hill; 2022:51-81.

Meah VL, Cockcroft JR, Backx K, Shave R, Stohr EJ. Cardiac output and related haemodynamics during pregnancy: a series of meta-analyses. *Heart*. 2016;102(7):518-526.

Item 82

ANSWER: E

Proximal fifth metatarsal fractures are categorized by zones. Zone 2 is located at the metaphyseal-diaphyseal junction at the fourth and fifth metatarsal joint. Zone 3 fractures are located at the proximal 1.5 cm of the diaphysis.

Because of poor blood supply, fractures in zone 2 or zone 3 of the fifth metatarsal have a risk for slow healing and nonunion. Surgical management of these fractures should be considered in active patients to decrease the risk for nonunion (SOR B).

Reference

Silver S, Williams E, Plunkett ML. Common foot fractures. *Am Fam Physician*. 2024;109(2):119-129.

Item 83

ANSWER: C

Evidence shows that in older, community-dwelling adults, all types of exercise reduce the rate of falls by 23% (rate ratio 0.77, 95% confidence interval [CI] 0.71 to 0.83) and the number of persons experiencing ≥1 falls in 1 year by 15% (risk ratio 0.85, 95% CI 0.81 to 0.89).

More women than men have been studied in exercise research, but exercise appears to show similar reductions in falls for men. Exercise has not been found to make a significant difference in quality of life in older adults. The evidence is insufficient to determine if exercise programs decrease fall-related hospital admissions.

References

Lee PG, Jackson EA, Richardson CR. Exercise prescriptions in older adults. *Am Fam Physician*. 2017;95(7):425-432.

Sherrington C, Fairhall NJ, Wallbank GK, et al. Exercise for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2019;2019(1):CD012424.

Item 84

ANSWER: E

Patients who have undergone removal of the distal ileum are at high risk for vitamin B_{12} malabsorption. Metformin can increase the risk for low vitamin B_{12}, but this patient's diabetic therapy consists of a GLP-1 receptor agonist and insulin. A strict vegan diet, but not vegetarian, is a risk factor for vitamin B_{12} deficiency. Statins and esophageal strictures are not known to affect vitamin B_{12} absorption.

Reference

Hoffbrand AV. Megaloblastic anemias. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 1. 21st ed. McGraw-Hill; 2022:766-776.

Item 85

ANSWER: D

There are several pharmaceutical options available to aid in smoking cessation. Varenicline is the most effective medical option and is safe in patients with mental health conditions. Current evidence suggests that the addition of nicotine replacement therapy (NRT) to varenicline improves smoking cessation rates. Both NRT and bupropion are effective for smoking cessation, but are not as effective as varenicline. Current evidence is insufficient to recommend a combination of NRT and bupropion.

Reference

Gaddey HL, Dakkak M, Jackson NM. Smoking cessation interventions. *Am Fam Physician*. 2022;106(5):513-522.

Item 86

ANSWER: E

The differential diagnosis for the painful rectal bleeding in this patient includes inflammatory bowel disease, infectious colitis, hemorrhoids, and ischemic colitis. The patient's multiple risk factors for vascular disease place him at higher risk for ischemic colitis. The differential diagnosis for painless rectal bleeding includes angiodysplasia, arteriovenous malformation, colon cancer, diverticular bleeding, and post-polypectomy bleeding. Irritable bowel syndrome does not cause rectal bleeding.

Reference

Hawks MK, Svarverud JE. Acute lower gastrointestinal bleeding: evaluation and management. *Am Fam Physician*. 2020;101(4):206-212.

Item 87

ANSWER: D

This patient has signs and a history of exposure indicative of frostbite. Treatment of frostbite requires thorough evaluation of the patient and treatment of hypothermia, if present. It is important to wait to rewarm until the chance of refreezing is low. Rapid rewarming should be performed in a water bath at 98.6–102.2 °F (37.0–39.0 °C). The affected extremity should be swirled in the water, avoiding the bath edge, until the skin appears red or purple and is soft to the touch. Slow rewarming is not recommended for frostbite. Using body heat by placing the hand in the axilla is not a method of rapid rewarming, although it can be used for spontaneous thawing if rapid rewarming is not possible. Dry heat should not be used due to difficulty maintaining a stable temperature. Small chemical heating pads that are often used for hands should be avoided as they can cause burns. The degree of injury related to frostbite cannot be determined until after rewarming, which will determine further steps in treatment.

Reference

Rathjen NA, Shahbodaghi SD, Brown JA. Hypothermia and cold weather injuries. *Am Fam Physician*. 2019;100(11):680-686.

Item 88

ANSWER: D

Abnormal uterine bleeding is a common issue for patients taking hormonal contraception, and family physicians should engage in shared decision-making with patients regarding its potential duration.

Frequent or prolonged bleeding can occur in up to 23% of patients using the etonogestrel implant, and this bleeding is less likely to improve over time. Patients on either continuous or cyclic combined oral contraceptives can be counseled to expect bleeding abnormalities during the first 3 months. The estrogen component helps with cycle control because it stabilizes the endometrium. Patients tend to have amenorrhea and lighter menses after 6–12 months of medroxyprogesterone acetate use (SOR B). While up to 35% of patients with the levonorgestrel IUD experience frequent or prolonged bleeding in the first 3 months of use, most have a reduction in uterine bleeding within 12 months (SOR B).

Reference

Schrager S, Fox K, Lee R. Abnormal uterine bleeding associated with hormonal contraception. *Am Fam Physician*. 2024;109(2):161-166.

Item 89

ANSWER: B

The most common cause of lateral hip pain is greater trochanteric pain syndrome (formerly referred to as greater trochanteric bursitis), which can be caused by gluteus medius tendinopathy or tearing, or iliotibial band friction. A gluteus medius tendon tear should be considered in patients with greater trochanteric pain syndrome that does not respond to anti-inflammatory medications and physical therapy. MRI and/or musculoskeletal ultrasonography can be used for further diagnosis if a gluteus medius tendon tear is suspected, and surgical intervention may improve outcomes in these patients.

Femoroacetabular impingement is a cause of intra-articular hip pain that usually presents with anterior pain. It is caused by bony overgrowth of the femoral head and neck or by a pincer deformity of the acetabulum and is usually bothersome with activities that require hyperflexion or a wide range of motion at the hip joint. Ischiofemoral impingement is caused by impingement of the quadratus femoris muscle and nerve between the proximal femur at the level of the lesser trochanter and ischial tuberosity, resulting in deep buttock pain worsened by activities requiring a long stride. Labral tears are associated with anterior hip pain and may cause a popping, catching, or clicking sound with activities. Piriformis syndrome is caused by the piriformis entrapping the sciatic nerve, and causes hip and buttock pain as well as sciatica.

Reference

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

Item 90

ANSWER: A

The American College of Cardiology/American Heart Association (ACC/AHA) recommend obtaining an EKG prior to clearance for sports participation only in a patient who has a positive result, such as elevated systemic blood pressure, on the AHA 14-point screening evaluation. An athlete with COVID-19 and mild symptoms should rest and avoid exercise for 14 days after diagnosis and may then return to sports if asymptomatic. A family history of cardiac problems or sudden death prior to age 50 is a qualifying element; however, a history of rheumatic heart disease in a relative would not be relevant. A coach’s preference is not a qualifying element.

References
ACC/AHA release recommendations for congenital and genetic heart disease screenings in youth. American College of Cardiology. September 15, 2014.

Schefft M, Wolf ER, Quinonez R, Haskell H, James J. Appropriate use of electrocardiography in preparticipation physical evaluations. *Am Fam Physician*. 2022;105(3):302-306.

Item 91

ANSWER: B

This patient has mild thrombocytopenia, defined as a platelet count of 100,000–150,000/mm^3. Moderate thrombocytopenia is defined as a platelet count of 50,000–99,000/mm^3 and severe thrombocytopenia as <50,000/mm^3. This can be due to splenic sequestration, decreased production, increased destruction, consumption in immune complexes or thrombi, or platelet clumping.

The initial test is examination of a peripheral blood smear to look for evidence of clumping, giant platelets, or fragmented RBCs. If the smear is normal except for decreased platelets, then the problem would be drug-induced thrombocytopenia or immune thrombocytopenic purpura.

Obtaining a prothrombin time and partial thromboplastin time is a rapid way to test the integrity of the clotting cascade. A serum haptoglobin level can be used to confirm hemolysis. Serum protein electrophoresis would be utilized if there is suspicion of monoclonal gammopathy. Referral to a hematologist for bone marrow evaluation is recommended for moderate to severe disease.

Reference
Gauer RL, Whitaker DJ. Thrombocytopenia: evaluation and management. *Am Fam Physician*. 2022;106(3):288-298.

Item 92

ANSWER: C

This patient has acute limb ischemia (ALI), a medical emergency with possible irreversible limb loss within 4–6 hours. According to the American Heart Association, emergent revascularization is recommended to salvage this patient's limb. An emergent referral to a vascular subspecialist is the most appropriate immediate action. Depending on location, this may be a vascular surgeon, a radiologist with invasive vascular treatment ability, or a cardiovascular or general surgeon with peripheral vascular training and expertise. Determining the source of the thrombosis is not as urgent as limb salvage. Arteriography is a possible aspect of limb salvage but is not the entire procedure. Aspirin, nitroglycerin, and transfer to an emergency department is appropriate for acute coronary thrombosis but not for ALI. Anticoagulation is required but is not a sufficient treatment.

References

Firnhaber JM, Powell CS. Lower extremity peripheral artery disease: diagnosis and treatment. *Am Fam Physician*. 2019;99(6):362-369.

Gerhard-Herman MD, Gornik HL, Barrett C, et al. 2016 AHA/ACC guideline on the management of patients with lower extremity peripheral artery disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*. 2017;135(12):e726-e779.

Item 93

ANSWER: C

The American Academy of Pediatrics recommends renal and bladder ultrasonography in children ≤24 months of age after a first episode of febrile urinary tract infection (UTI) to assess for vesicoureteral reflux. A voiding cystourethrogram is indicated if there are abnormal findings on ultrasonography. A repeat urine culture and prophylactic antibiotic therapy are not indicated in this case. Most children do not need a dimercaptosuccinic acid (DMSA) renal scan after a first episode of UTI.

References

Mattoo TK, Shaikh N, Nelson CP. Contemporary management of urinary tract infection in children. *Pediatrics*. 2021;147(2):e2020012138.

Veauthier B, Miller MV. Urinary tract infections in young children and infants: common questions and answers. *Am Fam Physician*. 2020;102(5):278-285.

Item 94

ANSWER: D

This patient has oligomenorrhea in the setting of polycystic ovary syndrome (PCOS). Patients with PCOS have a relative excess of estrogen stimulation of the endometrium and are at risk for endometrial hyperplasia and cancer. Combined hormonal contraceptives or medications that contain progesterone reduce this risk by stabilizing the endometrium, as well as improving excess androgen. Intermittent progestin therapy is the most appropriate option for this patient. Levonorgestrel-containing IUDs would also be an option. Hypertension is a relative contraindication for estrogen use, and this patient does not need hormonal contraception.

Reference

Joham AE, Norman RJ, Stener-Victorin E, et al. Polycystic ovary syndrome. *Lancet Diabetes Endocrinol*. 2022;10(9):668-680.

Item 95

ANSWER: D

The CDC's Advisory Committee on Immunization Practices recommends recombinant zoster vaccine for the prevention of herpes zoster (shingles) infection for immunocompetent patients age 50 and older. The vaccine is given as a series of 2 doses, administered 2–6 months apart. For patients who previously received live zoster vaccine, the full 2-dose series of recombinant vaccine is recommended.

References

Dooling KL, Guo A, Patel M, et al. Recommendations of the Advisory Committee on Immunization Practices for use of herpes zoster vaccines. *MMWR Morb Mortal Wkly Rep*. 2018;67(3):103-108.

Greenberg GM, Koshy PA, Hanson MJS. Adult vaccination. *Am Fam Physician*. 2022;106(5):534-542.

Item 96

ANSWER: B

The American Academy of Pediatrics and the American College of Radiology guidelines recommend that all children with suspected physical abuse undergo a skeletal survey, particularly those who are ≤2 years of age. A funduscopic examination should be obtained if retinal hemorrhages are suspected in children <2 years. Head CT without contrast is indicated if there is a concern for subdural, subarachnoid, or intraparenchymal injury. Abdominal CT with contrast is recommended if there is a concern for intra-abdominal injuries. A bone scan should be obtained if there is a concern for occult fractures up to 2 weeks after injury.

References

Christian CW; Committee on Child Abuse and Neglect, American Academy of Pediatrics. The evaluation of suspected child physical abuse. *Pediatrics*. 2015;135(5):e1337-1354.

Expert Panel on Pediatric Imaging; Wootton-Gorges SL, Soares BP, et al. ACR Appropriateness Criteria suspected physical abuse-child. *J Am Coll Radiol*. 2017;14(5S):S338-S349.

Suniega EA, Krenek L, Stewart G. Child abuse: approach and management. *Am Fam Physician*. 2022;105(5):521-528.

Item 97

ANSWER: C

Tinnitus is a common problem with unknown etiology that can significantly impact quality of life. It can signify a more concerning underlying neurologic condition such as vestibular schwannoma, and it is also associated with the use of medications that cause ototoxicity and with sensorineural hearing loss. Acute tinnitus can occur with otitis media, middle ear effusion, and cerumen impaction. Patients with tinnitus that is severe enough to cause distress should have an audiologic evaluation. Head imaging is only required in the setting of asymmetric or pulsatile tinnitus, asymmetric hearing loss, or abnormal neurologic findings.

The treatment with the best evidence of improved quality of life related to tinnitus is cognitive behavioral therapy. Hearing aids may alleviate tinnitus in hearing-impaired patients. Individuals with depression or anxiety related to their tinnitus should receive treatment for those conditions. Anticonvulsants such as carbamazepine do not have evidence of benefit and are not recommended. Other therapies with insufficient evidence of benefit include acupuncture, transcranial magnetic stimulation, surgical decompression of cranial nerve VIII, and hyperbaric oxygen.

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

Item 98

ANSWER: A

This patient has a Lisfranc injury of the right midfoot. Lisfranc injuries occur to the tarsometatarsal joint complex of the foot, which is stabilized by a complex ligamentous structure. Injuries can range from simple subluxations to complex fractures with dislocations. Falling forward on a plantar-flexed foot, such as when missing a stair step, is a common mechanism of injury. Forced dorsiflexion, which often occurs in sports or motor vehicle collisions, is another common mechanism. Missed Lisfranc injuries can lead to instability, deformity, and painful chronic osteoarthritis of the midfoot.
X-rays are the first step in diagnosis but have a sensitivity of around 84%. Plantar bruising is a classic sign and should trigger a high index of suspicion for Lisfranc injury even with negative plain or weight-bearing x-rays, and CT or MRI should be ordered. If a Lisfranc injury is seen on imaging or is highly suspected, the patient should remain non–weight bearing. Depending on the severity of the injury, referral to an orthopedic surgeon may be warranted after definitive imaging. Corticosteroid injection, heel splints, rigid ankle support, and physical therapy are not appropriate at this time.

References
Grewal US, Onubogu K, Southgate C, Dhinsa BS. Lisfranc injury: a review and simplified treatment algorithm. *Foot (Edinb)*. 2020;45:101719.

Silver S, Williams E, Plunkett ML. Common foot fractures. *Am Fam Physician*. 2024;109(2):119-129.

Item 99

ANSWER: E

This patient's case is highly consistent with multiple myeloma. In patients with suspected multiple myeloma, the measurement of serum free light chain levels as well as serum and urine protein electrophoresis can help confirm the diagnosis. Free light chains, including the subtypes kappa and lambda, are smaller components of immunoglobulins that are typically bound to heavy chains. In multiple myeloma, elevated levels of one of these unbound or "free" light chains can be found in the serum, or in the urine as the Bence Jones protein. A ratio of involved to uninvolved free light chains ≥100 and an involved free light chain concentration of ≥10 mg/dL is part of the diagnostic criteria for multiple myeloma.

An anti–cyclic citrullinated peptide (anti-CCP) antibody test is used to confirm a diagnosis of rheumatoid arthritis. Testing for antimitochondrial antibodies is used to assess for primary biliary cirrhosis. A creatine phosphokinase test is used as a marker of muscle damage. An erythrocyte sedimentation rate is a nonspecific marker of inflammation.

Reference

Cowan AJ, Green DJ, Kwok M, et al. Diagnosis and management of multiple myeloma: a review. *JAMA*. 2022;327(5):464-477.

Item 100

ANSWER: E

In November 2022, the U.S. Preventive Services Task Force concluded that the current evidence was insufficient to assess the balance of benefits and harms of screening for obstructive sleep apnea (OSA) in the general adult population (I recommendation). This applies to all adults ≥18 years of age without signs of OSA or with unrecognized symptoms of OSA. This recommendation also includes persons who are unaware of or are unconcerned by their symptoms.

Reference

US Preventive Services Task Force. Final recommendation statement: obstructive sleep apnea in adults: screening. Updated November 15, 2022.

Item 101

ANSWER: C

The most likely cause of this patient's dyspnea is COPD. This patient has an obstructive pattern on spirometry with an FEV_1/FVC ratio <0.7 and no improvement with administration of a bronchodilator, which rules out asthma and is consistent with COPD. Bronchiectasis is associated with a purulent cough and recurrent lower respiratory tract infections on imaging. Heart failure is unlikely because there are no signs of fluid overload and this patient's presentation is more consistent with COPD. Pulmonary fibrosis shows a restrictive pattern on spirometry.

References

Cagle SD Jr, Landrum LS, Kennedy AM. Chronic obstructive pulmonary disease: diagnosis and management. *Am Fam Physician*. 2023;107(6):604-612.

Zeller TA, Beben K, Walker S. Distinguishing asthma and COPD in primary care: a case-based approach. *Am Fam Physician*. 2023;107(3):247-252.

Item 102

ANSWER: A

Most guidelines recommend a brief rest period of at least 24–48 hours following a concussion. No medications are available specifically for concussion. A more conservative approach, including a longer rest period before returning to activity/play, is recommended for children and adolescents with concussions. Guidelines recommend waiting until the child or adolescent has successfully tolerated return to school before resuming full activity or play. After an initial brief period of rest, individuals with concussions should be encouraged to gradually return to normal daily activities such as school, work, or leisure activities as tolerated. Children do not need to be asymptomatic to return to school. Imaging should be used only to eliminate concerns of more significant injuries and not for evaluation of uncomplicated concussion.

Reference

Scorza KA, Cole W. Current concepts in concussion: initial evaluation and management. *Am Fam Physician*. 2019;99(7):426-434.

Item 103

ANSWER: B

This patient drinks more than the recommended amount of alcohol and is at increased risk for associated adverse clinical outcomes such as atrial fibrillation, disordered sleep, and cancers of the gastrointestinal tract. A brief counseling intervention is recommended and has been consistently shown to decrease alcohol consumption in adults. Medical therapy or a referral to a mental health specialist can be very helpful steps in further treatment once a diagnosis of alcohol use disorder has been established and the patient has shown readiness and motivation to change.

References

Alcohol and pregnancy: alcohol screening and brief intervention (SBI). Centers for Disease Control and Prevention. May 15, 2024.

Winslow BT, Onysko M, Hebert M. Medications for alcohol use disorder. *Am Fam Physician*. 2016;93(6):457-465.

Item 104

ANSWER: B

Intrahepatic cholestasis of pregnancy can occur in up to 2% of pregnancies and is most frequent in the second or third trimester. The condition causes severe pruritus initially occurring on the palms and soles without skin lesions. The pruritus may become generalized, and excoriations are often noted due to scratching. Liver enzymes may be mildly elevated and up to 10% of patients develop jaundice. A diagnosis can be made clinically and by elevated serum bile acid levels. The maternal prognosis is good, but the elevated bile acids present a risk for the fetus, and fetal surveillance should be initiated at the time of diagnosis. Due to the risk for preterm labor and fetal demise, delivery at 36–37 weeks' gestation is recommended. Antihistamines can be used to control pruritus, and ursodeoxycholic acid can be used to bind bile acids.
Hepatitis is a reasonable consideration, but this clinical picture is more compatible with intrahepatic cholestasis of pregnancy. A serum gamma-glutamyl transferase level would test for liver inflammation but would not add any useful information. Liver ultrasonography should be performed if obstruction is suspected. A skin biopsy may reveal excoriations but would not be diagnostic.

Reference

Erlandson M, Wertz MC, Rosenfeld E. Common skin conditions during pregnancy. *Am Fam Physician*. 2023;107(2):152-158.

Item 105

ANSWER: A

Hidradenitis suppurativa is a chronic inflammatory disease of the skin that predominantly affects the apocrine glands of the axillae and the groin. Multiple systematic reviews and meta-analyses have shown an increased association of hidradenitis suppurativa with type 2 diabetes. Associations have also been seen with cardiovascular risk factors such as metabolic syndrome, increased BMI, and smoking. Current research has not demonstrated any association with pituitary or thyroid disorders.

References

Bettoli V, Naldi L, Cazzaniga S, et al. Overweight, diabetes and disease duration influence clinical severity in hidradenitis suppurativa-acne inversa: evidence from the national Italian registry. *Br J Dermatol*. 2016;174(1):195-197.

Bui TL, Silva-Hirschberg C, Torres J, Armstrong AW. Hidradenitis suppurativa and diabetes mellitus: a systematic review and meta-analysis. *J Am Acad Dermatol*. 2018;78(2):395-402.

Frew JW. Hidradenitis suppurativa and diabetes: big data bias masks a true association. *Clin Exp Dermatol*. 2019;44(4):e151-e152.

Phan K, Charlton O, Smith SD. Hidradenitis suppurativa and diabetes mellitus: updated systematic review and adjusted meta-analysis. *Clin Exp Dermatol*. 2019;44(4):e126-e132.

Item 106

ANSWER: C

The relative risk (risk ratio) of infection for the participants who received the newly developed vaccine compared to those who did not is 0.40. The risk ratio is calculated by dividing the risk of the population under study by the risk of the population who is not (those who are vaccinated and those who are not, respectively): 0.19/0.47 = 0.40. In other words, vaccinated participants were 40% as likely (or 60% less likely) to contract the infection as those who were not vaccinated.

Reference

Dicker RC, Coronado F, Koo D, Gibson RG. Lesson three: measures of risk: measures of association. In: Dicker RC, Coronado F, Koo D, Gibson RG. *Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics.* 3rd ed. US Dept of Health and Human Services; 2006:3-39–3-51.

Item 107

ANSWER: A

The preferred initial diagnostic test for patients with suspected adenomyosis is a transvaginal ultrasound. CT scans are not helpful in the diagnosis. While there is higher specificity with MRI of the pelvis, its cost and availability make it a less desirable first choice. Hysteroscopy may be helpful if the diagnosis is in question due to an inconclusive ultrasound. Endometrial biopsy does not aid in the diagnosis of adenomyosis, but it may be indicated to evaluate for hyperplasia or malignancy in a patient who is older or has worsening symptoms.

Reference

Schrager S, Yogendran L, Marquez CM, Sadowski EA. Adenomyosis: diagnosis and management. *Am Fam Physician*. 2022;105(1):33-38.

Item 108

ANSWER: A

This patient has sustained a traumatic left hip fracture after falling while getting out of the shower. Hip fractures can present with anterior groin pain and the affected extremity is often visually deformed with external rotation, shortening, and abduction. Assuming the patient is stable and has an intact neurovascular status, the most appropriate next step would be to order radiography of the hip and pelvis. CT or MRI would be indicated if x-rays were negative but a high suspicion for fracture persists. Hip fractures do increase the risk for blood clot, and ultrasonography could be performed if clotting were a concern, but this would not be the first diagnostic step for this patient. A physical therapist should be consulted after making a diagnosis and developing a treatment plan.

Reference

Schroeder JD, Turner SP, Buck E. Hip fractures: diagnosis and management. *Am Fam Physician*. 2022;106(6):675-683.

Item 109

ANSWER: C

Diagnostic mammography is typically the preferred imaging modality for a palpable breast mass. However, ultrasonography is more sensitive in women younger than 30 years of age and is preferred. Screening mammography should be performed biennially for asymptomatic women ages 40−74. MRI is not appropriate for this patient at this time. Surgical excision and biopsy would be necessary if abnormalities are found on imaging.

References

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

US Preventive Services Task Force. Final recommendation statement: breast cancer: screening. Updated April 30, 2024.

Item 110

ANSWER: C

The American College of Cardiology/American Heart Association (ACC/AHA) recommends that adults engage in a minimum of 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate-intensity and vigorous-intensity aerobic activity, to reduce the risk for cardiovascular disease. Examples of moderate-intensity aerobic physical activity include brisk walking, ballroom dancing, active yoga, water aerobics, cycling on level ground, and doubles tennis. Examples of vigorous-intensity activities include jogging or running, swimming laps, cycling vigorously or on uneven ground, and playing singles tennis or basketball.

Of the examples given in this scenario, only 30 minutes of water aerobics (a moderate-intensity activity) 5 days per week meets the minimum recommended level of aerobic exercise. Casual walking, a light-intensity aerobic activity, is more favorable than sedentary behavior for reducing cardiovascular risk, but light-intensity activities do not contribute toward reducing cardiovascular disease risk as effectively as moderate- and vigorous-intensity activities, according to ACC/AHA guidelines.

References

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.

Physical activity guidelines for Americans. 2nd ed. US Department of Health and Human Services. 2018.

Item 111

ANSWER: C

This patient most likely has cough variant asthma, a common cause of chronic (lasting >8 weeks) cough in children. The minimum appropriate testing for all children with chronic cough is chest x-ray and spirometry. Polymerase chain reaction testing for pertussis is indicated in children who have had a recent upper respiratory tract illness that develops into a classic whooping cough. Bronchoscopy should be considered if there is a history of cough that started and persisted after a choking episode, suggestive of foreign body aspiration. GERD is another common cause of chronic cough but can usually be diagnosed by response to an empiric trial of an antacid medication and does not require 24-hour esophageal pH monitoring.

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

Item 112

ANSWER: B

Low-dose doxepin has the best evidence of efficacy and safety to address this patient's chronic insomnia with impaired sleep maintenance. Dosages of 3–6 mg nightly have been found to increase sleep efficiency and total sleep time. At this low dosage the adverse effect and safety profile was similar to placebo, even in older adults. It is thought that doxepin's mechanism of action is via an antihistamine effect, and the patient should be counseled about the possibility of anticholinergic side effects such as next-day sleepiness.

Diphenhydramine, a strong antihistamine, is typically much more sedating and is associated with other anticholinergic side effects. It is not recommended for routine use for insomnia. The antipsychotic quetiapine is sedating but should not be used in the absence of a psychiatric condition such as bipolar disorder. Benzodiazepines such as temazepam are sedating and can improve sleep onset but carry a significant risk for physical dependence, and long-term use is not recommended. The antidepressant trazodone is often used off-label to treat insomnia but evidence for this approach is weak and it should not be recommended as first-line therapy.

References
Drugs for chronic insomnia. *Med Lett Drugs Ther*. 2023;65(1667):1-6.

Matheson E, Hainer BL. Insomnia: pharmacologic therapy. *Am Fam Physician*. 2017;96(1):29-35.

Item 113

ANSWER: E

The most recent recommendation from the U.S. Preventive Services Task Force regarding screening for prediabetes and type 2 diabetes in children and adolescents states that there is not enough evidence to recommend for or against screening. Clinicians should use their judgment when recommending screening for particular patients and keep in mind that there may be harm caused by screening. Some adolescents may have a transient physiologic period of insulin resistance during puberty, which can spontaneously revert to a normal state. Screening these patients may lead to overdiagnosis, labeling, and overtreatment.

References
Mills J, Barnhart H. Screening for prediabetes and type 2 diabetes in children and adolescents. *Am Fam Physician*. 2023;107(1):79-80.

US Preventive Services Task Force. Final recommendation statement: prediabetes and type 2 diabetes in children and adolescents: screening. Updated September 13, 2022.

Item 114

ANSWER: D

This patient has postpartum thyroiditis, a destructive triphasic condition that can occur after pregnancy. This patient is in the hyperthyroid phase, which is followed by a hypothyroid phase that can last 3–12 months. The final stage is euthyroidism. β-Blockers are used for symptomatic treatment in the hyperthyroid phase. Observation only is not appropriate in this patient since she is symptomatic. While amiodarone and lithium can affect the thyroid, sertraline does not. Antithyroid medication is not indicated. A radioactive iodine uptake scan is contraindicated in a patient who is breastfeeding.

Reference
Martinez Quintero B, Yazbeck C, Sweeney LB. Thyroiditis: evaluation and treatment. *Am Fam Physician*. 2021;104(6):609-617.

Item 115

ANSWER: D

The normal hemoglobin level in a patient with sickle cell anemia is 6–11 g/dL. Acute anemia, defined as a drop of ≥2 g/dL in the hemoglobin level, is not a normal finding in sickle cell crisis. In children, the most likely cause of acute anemia is splenic sequestration. Emergency treatment with RBCs is needed because shock may develop quickly. The typical presentation of this emergent condition includes acute anemia, a low platelet level, and left upper quadrant pain and tenderness. Acute pain crises should generally not have the hemoglobin decrease seen in this patient and transfusions are not routine management. Another prominent cause of acute anemia is an aplastic crisis, which is usually accompanied by a significant decrease in the reticulocyte count. This would not be a usual presentation of acute chest syndrome, and an upper gastrointestinal bleed would not be a likely cause of this patient's condition.

Reference
Kavanagh PL, Fasipe TA, Wun T. Sickle cell disease: a review. *JAMA*. 2022;328(1):57-68.

Item 116

ANSWER: B

The initial pharmacologic management for female pattern hair loss is topical minoxidil. Topical finasteride in combination with topical minoxidil has also been shown to be efficacious. Similarly, oral spironolactone may be efficacious when used in combination with topical minoxidil, but there is no evidence for spironolactone as monotherapy. While low estrogen levels likely play a role in female pattern hair loss, there is no current evidence that using estrogen, progestin, or testosterone is helpful and these are not recommended.

Reference

Bertoli MJ, Sadoughifar R, Schwartz RA, Lotti TM, Janniger CK. Female pattern hair loss: a comprehensive review. *Dermatol Ther*. 2020;33(6):e14055.

Item 117

ANSWER: C

Discharges against medical advice comprise approximately 1%–2% of all hospital discharges and are challenging encounters to navigate. In such situations, communication, patient safety, and follow-up planning are of paramount importance. In assessing a patient who has requested discharge against medical advice, one of the primary tasks is to determine if the patient has the capacity to make this decision. Decision-making capacity evaluation involves 4 key components. The patient must be able to (1) understand the pertinent medical information, (2) appreciate the medical situation and potential consequences, (3) demonstrate logical reasoning of the various treatment options, and (4) communicate a choice. In this patient scenario, an inability to demonstrate appreciation of the medical situation and possible consequences of being discharged against the advice of the medical team would represent a contraindication to discharging the patient without further evaluation. For a patient who cannot demonstrate decision-making capacity, the next step is to consult an advance directive or surrogate decision-maker. If neither is available, the hospital ethics committee and medicolegal team should be contacted to provide further guidance. While moderate or severe alcohol withdrawal with associated mental status impairment likely would impair decision-making capacity, mild alcohol withdrawal syndrome alone would not contraindicate a discharge against medical advice. Active suicidal ideation may represent temporary impairment of decision-making capacity and psychiatric consultation is advised in such cases. This patient's history of depression with a past suicide attempt is not a contraindication to granting a request for discharge against medical advice. Neither a lack of health insurance nor an unstable housing situation would contraindicate a discharge against medical advice, although these factors should be considered in disposition and follow-up planning, with an effort to optimize the patient’s safety in transitioning care to the outpatient setting.

References

Barstow C, Shahan B, Roberts M. Evaluating medical decision-making capacity in practice. *Am Fam Physician*. 2018;98(1):40-46.

Merrell B, Gauer R. The challenges of discharge against medical advice: conflict and consequences. *Am Fam Physician*. 2023;108(2):193-196.

Item 118

ANSWER: D
The most common cause of foot drop is a compression neuropathy of the peroneal (also known as common fibular) nerve, most often at the fibular head just distal to the lateral knee. Tight-fitting braces and casts as well as prolonged leg crossing can cause this neuropathy. Cervical myelopathy may cause lower extremity weakness, but it may also cause numbness and upper motor neuron findings such as hyperreflexia. Diabetic neuropathy is typically bilateral and symmetric and rarely causes motor weakness. L5, but not L4, nerve root impingement can also cause foot drop. Tibial nerve compression at the tarsal tunnel causes pain into the lateral midfoot, but it does not lead to foot drop.

Reference
Amato AA, Barohn RJ. Peripheral neuropathy. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 2. 21st ed. McGraw-Hill; 2022:3480-3501.

Item 119

ANSWER: C

The U.S. Preventive Services Task Force (USPSTF) recommends screening for hepatitis C virus (HCV) infection in persons at risk for infection and also one-time screenings for all adults between 18 and 79 years of age (B recommendation). The USPSTF gives an I recommendation to bone density screening. Diabetes mellitus screening with a hemoglobin A_{1c} is not recommended because this patient is 71 years of age. Screening is recommended in adults 35−70 years of age with a BMI that is in the overweight or obese categories. This patient is over the age of 65 and no risk factors are noted, so HIV screening is not indicated. Lung cancer screening with low-dose CT of the chest is not recommended because the patient quit smoking >15 years ago.

Reference
US Preventive Services Task Force. Published recommendations. Updated 2023.

Item 120

ANSWER: E

This patient most likely has acute flaccid myelitis (AFM), a disease first named in 2014 to describe a rapid onset of flaccid limb weakness without a known cause. Most cases follow a viral febrile illness; the disease can progress rapidly to respiratory failure and dangerous autonomic instability. When AFM is suspected, patients should be immediately admitted to a hospital capable of intensive care support. Collecting samples for analysis is important but should not delay admission, nor should infectious disease consultation. Corticosteroids may also be administered once the patient is hospitalized, although human evidence is lacking in this condition. AFM cases have increased rapidly since the condition was first recognized. The disease occurs predominantly in younger children and causes a nondemyelinating injury to the central grey matter of the spinal cord. This is best discerned via MRI and helps to differentiate this disease from acute transverse myelitis, Guillain-Barré syndrome, or multiple sclerosis. Deficits are frequently proximal and do not follow an ascending pattern, and they may include cranial nerves. Family physicians should be aware of this condition and prepared to respond with the urgency required.

References

Acute flaccid myelitis: clinicians & health departments. Centers for Disease Control and Prevention. Reviewed August 16, 2022.

Fang X, Huda R. Acute flaccid myelitis (AFM): current status and diagnostic challenges. *J Clin Neurol*. 2020;16(3):376-382.

Item 121

ANSWER: A

The mental status examination is used to differentiate among conditions such as delirium, dementia, mania, and depression. The components of the mental status examination include attention, executive function, memory, orientation, and visuospatial proficiency. Attention is assessed by asking the patient to spell a word backward or count backward by 7s or 5s. Drawing a clock face with the hands at the 11:10 position tests for executive function. Memory is tested by asking the patient to repeat 3 words, allowing 5 minutes to elapse, and then asking the patient to recall the words. Orientation is assessed by asking the year, day, time, location, or name. Visuospatial proficiency is tested by requesting that the patient copy intersecting pentagons or a 3-dimensional cube on paper. Another option is to draw a triangle and request that the patient draw the same shape upside down.

Reference
Wiley AT, Dreher JW, London JD. Mental status examination in primary care. *Am Fam Physician*. 2024;109(1):51-60.

Item 122

ANSWER: E

This well-appearing child with chronic stridor most likely has the chronic condition laryngomalacia, in which the supraglottic structures collapse over the trachea during inhalation and result in the characteristic stridor. Symptoms typically begin between 1 and 2 months of age and are often chronic. Affected children are otherwise well. The stridor may be more pronounced with eating, and in some cases can lead to impaired weight gain or choking, cyanosis, or aspiration with feeding. As the child grows, the trachea will also grow and the condition will resolve.

Bacterial tracheitis, croup, and epiglottitis are all acute, infectious causes of stridor. Foreign body aspiration is typically an acute presentation that is more common in older children who are able to grasp and manipulate foreign objects more easily.

Reference
Skirko J. Childhood respiratory conditions: stridor. *FP Essent*. 2022;513:25-31.

Item 123

ANSWER: D

A distal phalanx fracture can occur after a crush injury or direct force to the end of the finger. The affected finger will have swelling, bruising, and often a subungual hematoma. Simple fractures can be managed with splinting in extension for 4–6 weeks with a finger guard or U-shaped aluminum splint. Hematomas that are more than 50% of the nail bed surface can be drained with a hot needle or instrument. Buddy taping is used for minimally angled middle or proximal phalanx fractures that do not involve the joints. A patient who is unable to flex or extend the distal interphalangeal (DIP) joint, has decreased sensation, or has a complex fracture extending into the joint should be referred to an orthopedic surgeon.

Reference
Childress MA, Olivas J, Crutchfield A. Common finger fractures and dislocations. *Am Fam Physician*. 2022;105(6):631-639.

Item 124

ANSWER: D

There are a variety of topical therapies for the treatment of postinflammatory hyperpigmentation in persons with Fitzpatrick skin types IV, V, and VI, including hydroquinone, fluocinolone/hydroquinone/tretinoin, and azelaic acid. Adapalene, tretinoin, and tazarotene are also acceptable options for hyperpigmentation associated with acne. Ammonium lactate 12% lotion, clindamycin 1% gel, hydrocortisone 1% cream, and metronidazole 0.75% gel are not effective topical therapies for postinflammatory hyperpigmentation in such patients.

Reference

Frazier WT, Proddutur S, Swope K. Common dermatologic conditions in skin of color. *Am Fam Physician*. 2023;107(1):26-34.

Item 125

ANSWER: D

A pulmonary flow murmur is an innocent systolic harsh murmur most commonly identified in adolescents and best heard at the left upper sternal border with minimal radiation. It is reduced when the Valsalva maneuver is performed. Atrial septal defects present as midsystolic murmurs best heard over the left upper sternal border. They radiate to the back and start softly then intensify in sound. Hypertrophic obstructive cardiomyopathy causes a midsystolic murmur heard over the left lower sternal border and apex. It is enhanced by the Valsalva maneuver. A mitral valve prolapse murmur is enhanced with the Valsalva maneuver in late systole, has a midsystolic click, and radiates to the apex. Tricuspid stenosis is a pathologic mid-diastolic murmur heard over the left lower sternal border. It increases with deep inspiration.

Reference

Ford B, Lara S, Park J. Heart murmurs in children: evaluation and management. *Am Fam Physician*. 2022;105(3):250-261.

Item 126

ANSWER: C

Fever of unknown origin (FUO) in adults is defined as a clinically documented fever ≥38.3 °C (101 °F) that occurs on multiple occasions without a clear diagnosis. Most cases of FUO are due to common diseases. About 75% of all cases of FUO in adults resolve spontaneously without a determined diagnosis.

When an initial workup is unremarkable, imaging with fluorodeoxyglucose (FDG)-PET/CT is helpful in identifying an inflammatory, infectious, or neoplastic cause (SOR B) with sensitivities ranging from 86% to 98% and specificities from 52% to 85%. It is estimated that a diagnosis is found in >50% of patients using FDG-PET/CT.
Patients who are neither neutropenic nor severely immunocompromised should not be started on empiric antibiotics (SOR C) or anti-inflammatories, as these have not been shown to effectively treat FUO. Previously, exploratory laparotomy was preferred in the workup of FUO but is now no longer indicated as the accuracy of less invasive diagnostic tests, such as CT, has increased. Bone marrow biopsy is not indicated in this patient with a normal CBC.

References

David A, Quinlan JD. Fever of unknown origin in adults. *Am Fam Physician*. 2022;105(2):137-143.

Haidar G, Singh N. Fever of unknown origin. *N Engl J Med*. 2022;386(5):463-477.

Item 127

ANSWER: D

This patient's symptoms meet the DSM-5 criteria for delirium related to his emergency department visit. Delirium is characterized by an acute disturbance in cognition, awareness, and attention that deviates from the patient's baseline cognition, fluctuates in severity, and develops within hours to days. Delirium has 3 subtypes: hyperactive, hypoactive, and mixed. An accurate diagnosis is vital to prevent inappropriate treatments, increased morbidity and mortality, and prolonged hospitalization. It is among the most common complications in hospitalized adults age 65 and older, especially among those who have undergone surgery. Patients with delirium have an increased risk for death in the following year. While the pathophysiology of delirium is not well understood, multiple comorbidities, older age, poor functional status, polypharmacy, and recent surgery are all independent risk factors. Symptoms can overlap with other diseases and a comprehensive history and physical examination are essential for a timely diagnosis.

Prevention using a multidisciplinary approach is the optimal management for delirium. Nonpharmacologic interventions are the foundation of delirium management, and no medications are approved by the FDA for its treatment. However, when indicated, second-generation antipsychotics such as risperidone, olanzapine, and quetiapine, are preferred over haloperidol because they have fewer side effects and a faster onset of action. The benzodiazepines lorazepam and midazolam may be given parenterally if delirium is attributed to alcohol consumption, uncontrollable seizure activity, or hypnotic drug withdrawal, but oral diazepam is not indicated. Trazodone may be used as an alternative treatment, but sertraline would not be appropriate.

Reference
Jaqua EE, Nguyen VTN, Chin E. Delirium in older persons: prevention, evaluation, and management. *Am Fam Physician*. 2023;108(3):278-287.

Item 128

ANSWER: D

Patients treated with amiodarone should be monitored with pulmonary function testing at baseline and if clinical suspicion of pulmonary toxicity develops. Amiodarone is commonly used to manage ventricular arrhythmias, and for rate and rhythm control in atrial fibrillation. Amiodarone is associated with pulmonary fibrosis, and baseline assessment with pulmonary function tests including measurement of diffusing capacity of the lungs for carbon monoxide (DLCO) and chest x-ray is recommended. Amiodarone is also associated with hypothyroidism and less commonly with hyperthyroidism, liver inflammation, peripheral neuropathies, optic neuritis and corneal microdeposits, and bluish skin discoloration. Amiodarone plasma levels, blood glucose monitoring, a CBC with differential, and urinalysis are not routinely indicated in patients taking amiodarone.

Reference
Siddoway LA. Amiodarone: guidelines for use and monitoring. *Am Fam Physician*. 2003;68(11):2189-2196.

Item 129

ANSWER: C

This patient has a structural abnormality of the uterus and IUDs are contraindicated. Furthermore, even well-controlled hypertension is a relative contraindication to estrogen-containing contraceptives such as combination pills and the vaginal ring, due to associated vascular risks in a patient older than 35 years. Nonhormonal methods and progesterone-only contraceptive pills, depot injections, and implants remain options. The etonogestrel implant is the most effective of these options.

Reference
Nguyen AT, Curtis KM, Tepper NK, et al. US medical eligibility criteria for contraceptive use, 2024. *MMWR Recomm Rep.* 2024;73(4):1-126.

Item 130

ANSWER: C

Use of an SSRI has been found to increase fall risk in older persons. While anticoagulants such as apixaban increase the risk for bleeding from fall-related injuries, they are recommended to prevent stroke in patients with atrial fibrillation regardless of fall risk and have not been noted to increase the risk of falling. Budesonide/formoterol, levothyroxine, and prednisone have not been associated with an increased fall risk.

References

Marcum ZA, Perera S, Thorpe JM, et al. Antidepressant use and recurrent falls in community-dwelling older adults: findings from the Health ABC Study. *Ann Pharmacother*. 2016;50(7):525-533.

Moncada LVV, Mire LG. Preventing falls in older persons. *Am Fam Physician*. 2017;96(4):240-247.

The 2023 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2023 updated AGS Beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2023;71(7):2052-2081.

Item 131

ANSWER: C

Hormone therapy until age 50 has been shown to mitigate some of the health outcomes of early menopause and is the most effective treatment for menopausal symptoms and improved quality of life. Combined hormone replacement therapy with estrogen and progesterone is indicated for women with a uterus, while estrogen monotherapy is indicated for women without a uterus. Hormone therapy does not seem to have a relevant effect on cancer risk in BRCA mutation carriers.

References

Huber D, Seitz S, Kast K, Emons G, Ortmann O. Hormone replacement therapy in BRCA mutation carriers and risk of ovarian, endometrial, and breast cancer: a systematic review. *J Cancer Res Clin Oncol*. 2021;147(7):2035-2045.

Kingsberg SA, Larkin LC, Liu JH. Clinical effects of early or surgical menopause. *Obstet Gynecol*. 2020;135(4):853-868.

Item 132

ANSWER: A

This patient presents with symptoms and findings consistent with uncomplicated respiratory syncytial virus (RSV) bronchiolitis. Symptoms may include fever, lethargy, rhinorrhea, congestion, sneezing, cough, tachypnea, retractions, and difficulty feeding. Since this patient does not have any airway complications, concurrent bacterial infection, or need for hospitalization to manage oxygen therapy, treatment is primarily supportive. Ensuring adequate hydration and nutrition, with intravenous or nasogastric tube intervention if needed, is the most appropriate intervention at this time. Antibiotics such as azithromycin should not be used for the treatment of RSV bronchiolitis unless there is concern for a coexisting bacterial infection. Corticosteroids such as dexamethasone should not be used for the treatment of RSV bronchiolitis since they do not decrease the risk for hospital admission or duration of stay. The diagnosis of RSV bronchiolitis is clinical and does not require viral testing for confirmation. Because chest x-rays do not improve outcomes or reduce antibiotic use, they should only be obtained if there is concern for airway complications.

Reference

Oppenlander KE, Chung AA, Clabaugh D. Respiratory syncytial virus bronchiolitis: rapid evidence review. *Am Fam Physician*. 2023;108(1):52-57.

Item 133

ANSWER: D

The classic toxidrome of apnea, stupor, and miosis is indicative of opioid overdose. Not all of these findings are always present. In a patient not physiologically sleeping, a respiratory rate ≤12/min is strongly suggestive of opioid toxicity. Respiratory depression is not usually found with overdose from anticonvulsants, antipsychotics, ethanol, or sedative-hypnotic agents.

Reference

Boyer EW. Management of opioid analgesic overdose. *N Engl J Med*. 2012;367(2):146-155.

Item 134

ANSWER: A

According to guidance from the American Heart Association, a supervised exercise program to improve functional status, decrease symptoms, and improve quality of life is the first-line treatment for mild, non–limb-threatening peripheral artery disease. Aspirin decreases cardiovascular risk but will not improve symptoms or quality of life. Cilostazol and pentoxifylline can help with symptoms but are second-line therapy. Revascularization can be considered but is not an initial treatment.

References

Firnhaber JM, Powell CS. Lower extremity peripheral artery disease: diagnosis and treatment. *Am Fam Physician*. 2019;99(6):362-369.

Treat-Jacobson D, McDermott MM, Bronas UG, et al. Optimal exercise programs for patients with peripheral artery disease: a scientific statement from the American Heart Association. *Circulation*. 2019;139(4):e10-e33.

Item 135

ANSWER: C

Evidence supports folic acid supplementation for all women prior to pregnancy and during the first trimester to prevent neural tube defects. There is no indication for treating asymptomatic bacteriuria prior to conception. While calcium supplementation is often recommended, this patient's diet provides sufficient calcium. There is uncertain evidence regarding vitamin B_{12} (cyanocobalamin) supplementation in pregnant patients. Vitamin D supplementation with cholecalciferol is also often recommended during pregnancy, but the appropriate dosage is 600 IU daily.

References

Finkelstein JL, Fothergill A, Venkatramanan S, et al. Vitamin B_{12} supplementation during pregnancy for maternal and child health outcomes. *Cochrane Database of Systematic Reviews*. 2024;1:CD013823.

Perez-Lopez FR, Pilz S, Chedraui P. Vitamin D supplementation during pregnancy: an overview. *Curr Opin Obstet Gynecol*. 2020;32(5):316-321.

Ramirez SI. Prenatal care: an evidence-based approach. *Am Fam Physician*. 2023;108(2):139-150.

Willemse JPMM, Meertens LJE, Scheepers HCJ, et al. Calcium intake from diet and supplement use during early pregnancy: the Expect study I. *Eur J Nutr*. 2020;59(1):167-174.

Item 136

ANSWER: E

The Ottawa knee rule helps to determine if imaging is needed in patients with knee trauma and can decrease unnecessary imaging. The criteria are age ≥55, isolated tenderness of the patella, tenderness at the fibular head, inability to flex the knee to 90°, and inability to bear weight for 4 steps both immediately after the injury and in the office or emergency department.

Tenderness over the patella is the most concerning symptom in this patient, and an x-ray is warranted to rule out fracture. Joint effusion is not a criterion of the Ottawa knee rule.

References

Bunt CW, Jonas CE, Chang JG. Knee pain in adults and adolescents: the initial evaluation. *Am Fam Physician*. 2018;98(9):576-585.

Hwang C. Calculated decisions: Ottawa knee rule. *Emerg Med Pract*. 2020;22(suppl 8):CD11-CD12.

Item 137

ANSWER: C

Medicaid, a federal program that is managed by individual states, is the predominant insurer for long-term care in the United States. Once older adults have exhausted their resources for long-term care, they can enroll in Medicaid. Sixty-two percent of nursing home residents are funded through Medicaid. As of 2022, 24% of all Americans were enrolled in Medicaid and almost 70% of enrollees participate in managed care programs.

Medicaid is a "countercyclical" program, meaning that as the economy worsens, enrollment increases. The federal government committed a 6.2% funding increase to states during the height of the COVID-19 pandemic. The Affordable Care Act of 2010 expanded Medicaid coverage to a higher percentage of adults, with the federal government initially funding the expansion. As of 2022, 38 states and the District of Columbia had adopted the Medicaid expansion. The majority of Medicaid recipients (56%) are from racial and ethnic minorities, reflecting income inequality in the United States.

Reference

Donohue JM, Cole ES, James CV, Jarlenski M, Michener JD, Roberts ET. The US Medicaid program: coverage, financing, reforms, and implications for health equity. *JAMA*. 2022;328(11):1085-1099.

Item 138

ANSWER: E

This patient's presentation is most consistent with postictal paralysis, also known as Todd paralysis. His history of seizures associated with a brain injury, the prolonged nature of his symptoms, the evidence of tongue biting on examination, and the absence of signs of stroke on CT all support this diagnosis. Postictal neurologic findings account for approximately 20% of suspected strokes in the emergency department. There is no history to support a diagnosis of conversion disorder or hypoglycemia in this patient. Hemiplegic migraine is generally accompanied by headache, and rarely presents in older adults. Multiple sclerosis symptoms would be expected to persist.

References

Brigo F, Lattanzi S. Poststroke seizures as stroke mimics: clinical assessment and management. *Epilepsy Behav*. 2020;104(Pt B):106297.

Kana T, Mehjabeen S, Patel N, Kawamj A, Shamim Z. Sporadic hemiplegic migraine. *Cureus*. 2023;15(5):e38930.

Xu SY, Li ZX, Wu XW, Li L, Li CX. Frequency and pathophysiology of post-seizure Todd's paralysis. *Med Sci Monit*. 2020;26:e920751.

Item 139

ANSWER: E

This patient has moderate persistent asthma, based on the history of symptoms that occur daily and more than once per week at night. Single maintenance and reliever therapy (SMART) with an inhaled corticosteroid and long-acting β-agonist (LABA) is recommended for management of moderate asthma in adults and adolescents (SOR A). LABAs have a boxed warning against monotherapy due to an increase in death related to asthma secondary to the risk for paradoxical bronchospasm. Long-acting muscarinic antagonists may also cause paradoxical bronchospasm and are not recommended for first-line therapy in asthma. Interleukin-5 antagonists may be considered in severe asthma as add-on maintenance but not as a reliever treatment. Leukotriene receptor antagonists are considered second-line controller therapy and not considered for reliever treatment.

Reference

Raymond TJ, Peterson TA, Coulter J. Chronic asthma treatment: common questions and answers. *Am Fam Physician*. 2023;107(4):358-368.

Item 140

ANSWER: B

Hepatitis A is a common cause of acute hepatic inflammation and jaundice. It was the most commonly reported type of hepatitis in the United States until 2004, when a combination of widespread vaccination and food safety practices decreased its incidence. Hepatitis A is caused by nonenveloped positive-strand RNA hepatitis A virus. Humans are the only natural host. Classified as a picornavirus, it is stable in many environments and is able to survive for multiple weeks on surfaces. It is transmitted through ingestion of infected stool particles. Consumption of contaminated water and food or close interpersonal or sexual contact with a person who is infected are common causes of infection, whereas drug use and blood transfusion are less common causes of infection. Incubation lasts approximately 30 days, followed by infectious symptoms, including nonspecific influenza-like symptoms, malaise, fever, nausea with vomiting, and abdominal pain. The classic findings are jaundice and dark urine.
Most cases of acute hepatitis A are self-limited and there is no specific treatment. Supportive and symptomatic care should be utilized and hepatotoxins should be avoided. A liver transplant may be considered if fulminant hepatic failure develops. Serologic testing is required for the diagnosis of hepatitis A. Anti–hepatitis A IgM antibodies become detectable 5–10 days before the onset of symptoms, peak within a month, and can persist for >6 months. However, anti–hepatitis A IgG antibodies appear during the convalescent phase and remain elevated throughout the patient's lifetime. Therefore, anti–hepatitis A IgM antibodies would confirm the diagnosis instead of anti-hepatitis A IgG antibodies. Anti−hepatitis B surface antibodies indicate immunity to hepatitis B and would not be present in acute hepatitis B infection. A serum creatinine level >2 mg/dL is a positive predictor of fulminant hepatitis and death, but it is not diagnostic of hepatitis A. Although laboratory findings may include elevations of serum transaminase levels, it is not specific for hepatitis A.

References

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

Wilkins T, Sams R, Carpenter M. Hepatitis B: screening, prevention, diagnosis, and treatment. *Am Fam Physician*. 2019;99(5):314-323.

Item 141

ANSWER: B

The U.S. Preventive Services Task Force (USPSTF) recommends depression screening for adolescents beginning at age 12 (B recommendation). The American Academy of Pediatrics (AAP) recommends routine vision screening from 12 months to 5 years of age and only risk-based vision screening in adolescents as vision conditions are less likely to begin in older children. The USPSTF recommends vision screening at least once in all children ages 3–5 (B recommendation). Iron deficiency screening is not recommended in adolescents; however, the AAP recommends universal hemoglobin or hematocrit screening at 12 months of age while the USPSTF states that there is insufficient evidence (I recommendation). While the AAP recommends dyslipidemia screening in children ages 9–11, the USPSTF currently states there is insufficient evidence for screening for ≤20 years of age (I recommendation). The USPSTF recommends against cervical cancer screening before age 21 (D recommendation). Furthermore, cytology is recommended for those age 21 and older while high-risk HPV testing is not recommended until age 30.

References

Lambert M. AAP updates recommendations for routine preventive pediatric health care. *Am Fam Physician*. 2016;94(4):324.

US Preventive Services Task Force. A & B recommendations.

US Preventive Services Task Force. Final recommendation statement: iron deficiency anemia in young children: screening. Updated September 7, 2015.

US Preventive Services Task Force. Final recommendation statement: lipid disorders in children and adolescents: screening. Updated July 18, 2023.

US Preventive Services Task Force. Final recommendation statement: vision in children ages 6 months to 5 years: screening. Updated September 5, 2017.

Item 142

ANSWER: D

This patient has new-onset chest pain with symptoms typical of coronary artery disease and needs urgent evaluation with coronary angiography and possible percutaneous coronary intervention (PCI). He has a new left bundle branch block indicative of acute coronary syndrome and should be emergently transported to a facility that can perform urgent coronary angiography and further intervention as needed, including PCI. Once the patient has been identified as having acute coronary syndrome, transfer should not be delayed while waiting for further cardiac testing. Outpatient laboratory testing, coronary CT angiography, and cardiac stress testing would not be appropriate in this situation.

References

Buelt A, Kennady J, Arnold M. Chest pain evaluation: updated guidelines from the AHA/ACC. *Am Fam Physician*. 2023;107(2):204-206.

Gulati M, Levy PD, Mukherjee D, et al. 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR guideline for the evaluation and diagnosis of chest pain: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2021;144(22):e368-e454.

Item 143

ANSWER: C

This patient has a rash with a distribution and appearance that is highly consistent with psoriasis, with thick, well-circumscribed plaques with silvery scale on the lower back and extensor elbows. Drug eruptions can have variable presentations, but this rash is much more consistent with psoriasis. Pityriasis rosea presents with more diffuse macules and patches with a fine scale. Both psoriasis and seborrheic dermatitis can cause itchy red rashes on the scalp, but seborrhea is less frequent on the back and elbows. Tinea corporis is more common in intertriginous areas.

Reference

Armstrong AW, Read C. Pathophysiology, clinical presentation, and treatment of psoriasis: a review. *JAMA*. 2020;323(19):1945-1960.

Item 144

ANSWER: C

Screening for signs of chronic kidney disease–mineral and bone disorder (CKD-MBD) through the monitoring of calcium, phosphate, parathyroid hormone (PTH), and alkaline phosphatase, and possibly 25-hydroxyvitamin D levels is recommended beginning in stage 3 CKD. Early changes include the kidneys' decreased ability to excrete phosphate. This can lead to elevated serum phosphate and PTH levels (secondary hyperparathyroidism). Decreased renal vitamin D production can lead to a lower calcium level, which also increases the PTH level. These changes can then lead to the abnormalities of bone strength and mineralization seen in CKD-MBD.

References

Goodbred AJ, Langan RC. Chronic kidney disease: prevention, diagnosis, and treatment. *Am Fam Physician*. 2023;108(6):554-561.

Ketteler M, Block GA, Evenepoel P, et al. Executive summary of the 2017 KDIGO chronic kidney disease-mineral and bone disorder (CKD-MBD) guideline update: what's changed and why it matters. *Kidney Int*. 2017;92(1):26-36.

Item 145

ANSWER: B

This patient's presentation is consistent with a malignant bowel obstruction, and CT of the abdomen and pelvis with contrast is useful for determining if any surgical interventions are warranted. Ultrasonography typically does not yield useful information due to the amount of bowel gas present during an obstruction. A PET/CT scan would not be indicated to evaluate for the etiology of a bowel obstruction in an acute situation. A HIDA scan or magnetic resonance cholangiopancreatography (MRCP) would be useful if biliary obstruction or gallbladder disease were suspected, but these are not helpful in the evaluation of a malignant bowel obstruction.

References

Jackson P, Vigiola Cruz M. Intestinal obstruction: evaluation and management. *Am Fam Physician*. 2018;98(6):362-367.

Yew KS, George MK, Allred HB. Acute abdominal pain in adults: evaluation and diagnosis. *Am Fam Physician*. 2023;107(6):585-596.

Item 146

ANSWER: D

Adding an SGLT2 inhibitor to the medication regimen of patients with heart failure and without diabetes mellitus has been shown to reduce heart failure– related hospitalizations. Calcium channel blockers may have no effect or worsen heart failure. DPP-4 inhibitors can worsen the effects of heart failure. Insulin provides improved glucose control for patients with diabetes mellitus; however, it has not been independently shown to reduce heart failure–related hospitalizations. Statins are effective at reducing cholesterol levels but have not been shown to reduce heart failure–related hospitalizations.

References

Anker SD, Butler J, Filippatos G, et al. Empagliflozin in heart failure with a preserved ejection fraction. *N Engl J Med*. 2021;385(16):1451-1461.

Mancini GBJ, O'Meara E, Zieroth S, et al. 2022 Canadian Cardiovascular Society guideline for use of GLP-1 receptor agonists and SGLT2 inhibitors for cardiorenal risk reduction in adults. *Can J Cardiol*. 2022;38(8):1153-1167.

Shaughnessy AF. SGLT2 inhibitors improve all-cause and cardiovascular mortality in patients regardless of diabetes or heart failure status. *Am Fam Physician*. 2021;103(10):630-631.

Shaughnessy AF. SGLT-2 inhibitors reduce heart failure-related hospitalization in patients without diabetes. *Am Fam Physician*. 2022;106(4):461-462.

Zou X, Shi Q, Vandvik PO, et al. Sodium-glucose cotransporter-2 inhibitors in patients with heart failure: a systematic review and meta-analysis. *Ann Intern Med*. 2022;175(6): 851-861.

Item 147

ANSWER: E

This patient's age and elevated BMI put her at risk for endometrial cancer. Appropriate evaluation includes an endometrial biopsy. Patients who have endometrial hyperplasia with atypia should be referred for hysterectomy, as it is the treatment of choice. Oral progesterone may be offered to a patient who desires a future pregnancy. Endometrial hyperplasia without atypia may be treated with a levonorgestrel IUD or oral progesterone. Uterine MRI would not offer any additional information for diagnosis and would not change the need for hysterectomy.

Reference
Jordahl-Iafrato MA, Reed H, Hadley SK, Kolman KB. A systematic approach to chronic abnormal uterine bleeding. *J Fam Pract*. 2019;68(2):82-84, 86-92.

Item 148

ANSWER: A

Food allergies affect 8% of children and about 40% of these food allergies are reported as severe, causing anxiety for parents and caregivers. Peanuts, shellfish, cow's milk, tree nuts, and eggs are the most common allergenic foods, and peanuts are the most common food that causes life-threatening anaphylaxis. Risk factors include atopic dermatitis; allergic rhinitis; asthma; and allergies to latex, medications, and insect venoms. A family history of atopy as well as vitamin D insufficiency and antibiotic use in the first 2 years of life also increase the risk for developing food allergies.

The primary treatment of food allergies is eliminating the offending foods. Preventive measures shown to decrease the risk for developing food allergies include sequential exposure to allergenic foods starting between 4 and 6 months of life and restricting exposure to cow's milk in the first 3 days of life. Exclusive breastfeeding for 3–4 months reduces the likelihood of developing asthma and eczema, but it does not reduce the risk for food allergies. There is no supporting evidence that restricting the mother's diet during pregnancy and lactation reduces the risk for food allergies in children.

Reference
Bright DM, Stegall HL, Slawson DC. Food allergies: diagnosis, treatment, and prevention. *Am Fam Physician*. 2023;108(2):159-165.

Item 149

ANSWER: B

IgA deficiency is more common in patients with celiac disease than in the general population. Patients with IgA deficiency often experience chronic upper respiratory tract infections, such as recurrent sinus infections. It is important to include a total IgA level when obtaining celiac disease panels to avoid a false-negative result. Serologic testing along with a careful history is sufficiently sensitive to rule out celiac disease, but the gold standard for diagnosis still includes duodenal biopsy. Every patient with signs or symptoms of chronic malabsorption (diarrhea, steatorrhea, weight loss, fat-soluble vitamin deficiencies, bloating, abdominal pain) should be tested for celiac disease. This initial laboratory testing can be performed by primary care clinicians, and specialty care should be sought if the workup fails to rule out celiac disease. Diagnostic imaging is not sensitive or specific for celiac disease. While fecal fat, vitamin D, and vitamin B_{12} levels may all be part of the overall workup in this patient, they are not the most helpful tests in diagnosing celiac disease at this time.

References

Burgers K, Lindberg B, Bevis ZJ. Chronic diarrhea in adults: evaluation and differential diagnosis. *Am Fam Physician*. 2020;101(8):472-480.

Pelkowski TD, Viera AJ. Celiac disease: diagnosis and management. *Am Fam Physician*. 2014;89(2):99-105.

Item 150

ANSWER: A

The Infectious Diseases Society of America recommends glecaprevir/pibrentasvir for patients with chronic hepatitis C virus (HCV) infection who have never received treatment and do not have cirrhosis or have compensated cirrhosis. Limiting alcohol use is important to decrease the risk for cirrhosis, but cessation is not necessary in those undergoing treatment for HCV infection. Further hepatitis C viral load testing in 3 months is not the most appropriate next step for this patient. While vaccinations are important, the hepatitis A and B series do not need to be completed prior to initiating treatment. Further imaging is not indicated for this patient given her low Fibrosis-4 (FIB-4) score, which indicates a very low likelihood of cirrhosis.

Reference

Bhattacharya D, Aronsohn A, Price J, Lo Re V; AASLD-IDSA HCV Guidance Panel. Hepatitis C guidance 2023 update: AASLD-IDSA recommendations for testing, managing, and treating hepatitis C virus infection. *Clin Infect Dis*. 2023:ciad319.

Item 151

ANSWER: B

This patient has classic symptoms of diabetic ketoacidosis (DKA) triggered by a malfunctioning insulin pump, but he appears euglycemic on presentation due to taking an SGLT2 inhibitor. Glycosuria occurs and can even persist 10–14 days after discontinuation of an SGLT2 inhibitor. Further evaluation of this patient would reveal an elevated urine glucose level despite his relatively normal serum glucose level. With a high anion gap, a low arterial pH and a high serum β-hydroxybutyrate level should also be expected. Atorvastatin is not implicated in acute metabolic problems. Lisinopril can cause hyperkalemia, but not DKA. Metformin can cause lactic acidosis in acutely ill patients, but the risk is low and lactic acid rather than ketone bodies would be high. GLP-1 receptor agonists such as semaglutide are not associated with an increased risk for euglycemic DKA.

References

Dutta S, Kumar T, Singh S, Ambwani S, Charan J, Varthya SB. Euglycemic diabetic ketoacidosis associated with SGLT2 inhibitors: a systematic review and quantitative analysis. *J Family Med Prim Care*. 2022;11(3):927-940.

Powers AC, Niswender KD, Evans-Molina C. Diabetes mellitus: diagnosis, classification, and pathophysiology. In: Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. Vol 2. 21st ed. McGraw-Hill; 2022:3094-3103.

Item 152

ANSWER: B

This patient has hyperprolactinemia due to pituitary microadenoma and guidelines from the Endocrine Society recommend cabergoline as an initial treatment. Studies have found that cabergoline is more effective than bromocriptine or other dopamine agonists at decreasing prolactin levels and shrinking tumor size. Oral contraceptives may regulate menstrual conditions but are not recommended as first-line treatment for hyperprolactinemia. Metoclopramide and risperidone are dopamine antagonists and can be a cause of hyperprolactinemia.

References
Bruehlman RD, Winters S, McKittrick C. Galactorrhea: rapid evidence review. *Am Fam Physician*. 2022;106(6):695-700.

Melmed S, Casanueva FF, Hoffman AR, et al. Diagnosis and treatment of hyperprolactinemia: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2011;96(2):273-288.

Item 153

ANSWER: C

One of the most important purposes of the sports preparticipation evaluation is to screen for potentially life-threatening cardiovascular conditions. Hypertrophic cardiomyopathy is a leading cause of sudden cardiac death in younger athletes, and recognition of the typical pathologic murmur that occurs with this condition can identify people who are at risk. The characteristic harsh midsystolic ejection murmur results from a dynamic left ventricular outflow tract obstruction. The murmur intensifies with maneuvers that reduce preload or afterload, which increase the relative obstruction. Moving from squatting to standing, the Valsalva maneuver, and dehydration states all reduce preload and therefore cause the murmur to increase. In contrast, maneuvers that increase preload or afterload cause the murmur to soften due to decrease in the relative obstruction. This includes moving from standing to squatting and passive leg raise, which increase preload, and isometric handgrip, which increases afterload.

References
Authors/Task Force members; Elliott PM, Anastasakis A, et al. 2014 ESC guidelines on diagnosis and management of hypertrophic cardiomyopathy: the Task Force for the Diagnosis and Management of Hypertrophic Cardiomyopathy of the European Society of Cardiology (ESC). *Eur Heart J*. 2014;35(39):2733-2779.

Houston BA, Stevens GR. Hypertrophic cardiomyopathy: a review. *Clin Med Insights Cardiol*. 2015;8(suppl 1):53-65.

Leggit JC, Whitaker D. Diagnosis and management of hypertrophic cardiomyopathy: updated guidelines from the ACC/AHA. *Am Fam Physician*. 2022;105(2):207-209.

MacDonald J, Schaefer M, Stumph J. The preparticipation physical evaluation. *Am Fam Physician*. 2021;103(9):539-546.

Marian AJ, Braunwald E. Hypertrophic cardiomyopathy: genetics, pathogenesis, clinical manifestations, diagnosis, and therapy. *Circ Res*. 2017;121(7):749-770.

Item 154

ANSWER: E

This patient is presenting with priapism, defined as an erection that is not associated with sexual activity and lasts ≥4 hours. Priapism may be ischemic or nonischemic. Nonischemic (high-flow) priapism is much rarer, stemming from an arterial fistula caused by trauma. Ischemic priapism typically presents with a painful, fully erect penis with a natural history of painful erections ranging from days to weeks preceding the acute presentation. Sickle cell disease is an important etiology of ischemic priapism. Other causes include other hematologic issues such as leukemia, and medications. Intracavernosal vasodilator agents and antipsychotics are more likely causes than phosphodiesterase-5 inhibitors. This is a urologic emergency that requires emergent evaluation and treatment by a urologist. Analgesic therapy is not the most appropriate next step for this patient. While a penile blood gas measurement can be used to distinguish between ischemic and nonischemic processes, urologic evaluation and treatment should not be delayed. Intracavernosal alprostadil is a common cause of ischemic priapism. Intracavernosal phenylephrine is used in the treatment of ischemic priapism after a urologist has performed several rounds of aspiration and reestablished oxygenated blood flow into the corpus cavernosum.

References

Ericson C, Baird B, Broderick GA. Management of priapism: 2021 update. *Urol Clin North Am*. 2021;48(4):565-576.

Ladkany D, Davis JE. Penile swelling. *Am Fam Physician*. 2020;102(12):751-752.

Item 155

ANSWER: C

This patient is at high risk for bladder cancer. Risk factors for urologic cancer in patients with hematuria include age ≥60 years, a >30-pack-year smoking history, >25 RBCs/hpf on a single urinalysis, and a history of gross hematuria. Patients with hematuria who are at high risk for bladder cancer should undergo CT urography plus cystoscopy. Cytology may be used as an adjunct if initial studies do not reveal a cause for the hematuria. CT alone may not identify bladder cancer. Urinary tract ultrasonography plus cystoscopy is adequate and more cost effective for patients who are at moderate and low risk. Urinary tract MRI is not recommended in this situation.

Reference

Ingelfinger JR. Hematuria in adults. *N Engl J Med*. 2021;385(2):153-163.

Item 156

ANSWER: C

The first-line pharmacologic treatment of panic disorder is SSRI and SNRI antidepressant medications (SOR A), including the SSRI escitalopram. Evidence has not shown bupropion or buspirone to be effective in the treatment of panic disorder. Sedating antihistamines such as hydroxyzine also are not recommended for first-line management of panic disorder because of limited evidence of effectiveness and decreased tolerability due to their anticholinergic effects. Benzodiazepines such as lorazepam are less effective than antidepressants but improve symptoms compared to placebo, but they carry an increased risk for adverse effects including tolerance, dependence, withdrawal, and mortality.

Reference

DeGeorge KC, Grover M, Streeter GS. Generalized anxiety disorder and panic disorder in adults. *Am Fam Physician*. 2022;106(2):157-164.

Item 157

ANSWER: C

Altitude sickness is possible with rapid ascent to altitudes over 2500 m (8202 ft) above sea level. Slow ascent is usually recommended, but it is not often feasible for recreational winter athletes. Acetazolamide is the mainstay of pharmaceutical prophylaxis if a patient desires medication. Other actions such as avoiding alcohol and increasing hydration are often recommended but are not well supported. No genetic alleles have been identified that confer increased risk for altitude sickness. Dexamethasone can be used to prevent and treat severe high-altitude pulmonary edema, but it is not recommended as a first-line prevention in patients such as this. Ibuprofen has been proposed as an alternative prophylactic agent, but studies have shown it to be inferior to acetazolamide.

References

Luks AM, Swenson ER, Bartsch P. Acute high-altitude sickness. *Eur Respir Rev*. 2017;26(143):160096.

Savioli G, Ceresa IF, Gori G, et al. Pathophysiology and therapy of high-altitude sickness: practical approach in emergency and critical care. *J Clin Med*. 2022;11(14):3937.

Item 158

ANSWER: C

Keratoacanthoma is a rapidly growing lesion that may be difficult to distinguish from cutaneous squamous cell carcinoma (CSCC) and may contain CSCC in its base. Because of this, it should be considered a malignant lesion and requires adequate pathology and removal. Actinic keratosis is a precursor to CSCC. Basal cell carcinoma and malignant melanoma are not related to keratoacanthoma.

Reference

Firnhaber JM. Basal cell and cutaneous squamous cell carcinomas: diagnosis and treatment. *Am Fam Physician*. 2020;102(6):339-346.

Item 159

ANSWER: A

According to the 2022 American College of Cardiology/American Heart Association heart failure guidelines, guideline-directed medical therapy should be continued in patients with heart failure with an improved or recovered ejection fraction (EF). This is based on the TRED-HF trial that showed a relapse of 44% in patients with dilated cardiomyopathy and an improved EF who discontinued pharmacotherapy compared with 0% relapse in those who continued pharmacotherapy. The recommendation for this patient would be to continue his current regimen.

References

Belkin MN, Cifu AS, Pinney S. Management of heart failure. *JAMA*. 2022;328(13):1346-1347.

Halliday BP, Wassall R, Lota AS, et al. Withdrawal of pharmacological treatment for heart failure in patients with recovered dilated cardiomyopathy (TRED-HF): an open-label, pilot, randomised trial. *Lancet*. 2019;393(10166):61-73.

Heidenreich PA, Bozkurt B, Aguilar D, et al. 2022 AHA/ACC/HFSA guideline for the management of heart failure: executive summary: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *J Am Coll Cardiol*. 2022;79(17):1757-1780.

Item 160

ANSWER: B

This patient has a buckle fracture, or an incomplete compression fracture. These fractures are common in younger children due to the relative elasticity of their bones. Increasing evidence supports a shorter period of immobilization and follow-up is often not necessary if symptoms are improving. Removable splints are acceptable and may be better tolerated and more convenient in younger patients.

References

Kuba MHM, Izuka BH. One brace: one visit: treatment of pediatric distal radius buckle fractures with a removable wrist brace and no follow-up visit. *J Pediatr Orthop*. 2018;38(6):e338-e342.

Patel DS, Statuta SM, Ahmed N. Common fractures of the radius and ulna. *Am Fam Physician*. 2021;103(6):345-354.

Item 161

ANSWER: C

Live virus vaccines such as MMR and varicella are contraindicated in immunocompromised persons, including those who are undergoing chemotherapy. However, COVID-19, hepatitis B, pneumococcal, and Tdap vaccines would all be indicated in this patient, especially considering his immunocompromised status.

Reference

Adult immunization schedule by age: recommendations for ages 19 years or older, United States, 2024. Centers for Disease Control and Prevention. Last reviewed November 16, 2023.

Item 162

ANSWER: B

This patient experienced a deep vein thrombosis (DVT) that was provoked by his recent immobilization in a cast. According to the American College of Chest Physicians 2021 guidelines, the recommended duration of anticoagulation for an initial episode of a provoked DVT and pulmonary embolism is 3 months.

Reference
Stevens SM, Woller SC, Baumann Kreuziger L, et al. Antithrombotic therapy for VTE disease: second update of the CHEST guideline and expert panel report. *Chest*. 2021;160(6):e545-e608.

Item 163

ANSWER: C

Disorders of taste and smell are reported by as many as one-fifth of those ≥40 years of age and one-third of those ≥80 years of age. These disorders affect patients' quality of life and safety. The differential diagnosis is extensive. Of the options listed, only a deficiency of vitamin B_3 can cause a taste disturbance (SOR C).

Reference
Savard DJ, Ursua FG, Gaddey HL. Smell and taste disorders in primary care. *Am Fam Physician*. 2023;108(3):240-248.

Item 164

ANSWER: D

This patient's symptoms of heartburn and regurgitation that occur at least twice per week and significantly affect her quality of life are suggestive of GERD. The most appropriate initial management for this patient would be a proton pump inhibitor (PPI) daily for 4–8 weeks. PPIs are more effective than antacids and H_2-receptor antagonists in providing sustained symptomatic relief and resolution of esophagitis.

Antacids provide short-term relief of symptoms by neutralizing gastric acid but do not provide sustained relief or resolve esophagitis, making them inadequate as the initial management strategy for this patient. Similarly, H_2-receptor antagonists reduce the secretion of gastric acid but are less effective than PPIs in providing symptom relief and healing esophagitis. They are typically used as an alternative treatment or for milder cases of GERD. As-needed PPIs are not the preferred initial management strategy for this patient. Esophageal pH monitoring is indicated in cases in which there is diagnostic uncertainty or when evaluating the effectiveness of acid suppression therapy in refractory GERD, but it is not necessary for the initial management of uncomplicated GERD.

Reference
Katz PO, Dunbar KB, Schnoll-Sussman FH, Greer KB, Yadlapati R, Spechler SJ. ACG clinical guideline for the diagnosis and management of gastroesophageal reflux disease. *Am J Gastroenterol*. 2022;117(1):27-56.

Item 165

ANSWER: C

Bariatric surgery is highly effective in treating obesity-related comorbidities, particularly diabetes mellitus (SOR A). It also reduces obesity-related mortality (SOR B) and results in greater weight loss than nonsurgical weight loss interventions (SOR A). Among the 3 major bariatric surgery procedures, Roux-en-Y gastric bypass leads to the greatest weight loss over the first 2 years.

Reference

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

Item 166

ANSWER: B

Bruises on the torso, ears, or neck in children ≤4 years of age are predictive of child abuse. "TEN 4" is a useful mnemonic for identifying child abuse: torso (T), ear (E), neck (N), and 4 (children ≤4 years of age and any infant <4 months of age). Bruising is the most common injury of physical abuse and may be the only external indicator of an internal injury. Bruises vary by age, location, and pattern. Any bruises identified in a nonambulatory infant require careful medical evaluation for possible abuse.
Bruising related to normal activity typically increases with age. The majority of preschool- and school-aged children have accidental bruises. The most common sites of bruising in nonabused, ambulatory children are the knees and shins, with the majority located over bony prominences, including the forehead.

References

Christian CW; Committee on Child Abuse and Neglect, American Academy of Pediatrics. The evaluation of suspected child physical abuse. *Pediatrics*. 2015;135(5):e1337-e1354.

Suniega EA, Krenek L, Stewart G. Child abuse: approach and management. *Am Fam Physician*. 2022;105(5):521-528.

Item 167

ANSWER: E

This patient is most likely having a flare of gout. Gout is caused by the deposition of monosodium urate crystals in large joints, classically the first metatarsophalangeal joint. A patient with a gout flare typically has an elevated uric acid level.

A C-reactive protein level and an erythrocyte sedimentation rate would likely be elevated in this patient, but elevations in those laboratory values are not specific for the likely diagnosis of gout. A CBC would potentially show elevated WBCs in this patient. However, leukocytosis is nonspecific and would not lead to the specific diagnosis of gout. A comprehensive metabolic panel likely would not provide insight into the likely diagnosis.

References

Abhishek A, Roddy E, Doherty M. Gout-a guide for the general and acute physicians. *Clin Med (Lond)*. 2017;17(1):54-59.

Clebak KT, Morrison A, Croad JR. Gout: rapid evidence review. *Am Fam Physician*. 2020;102(9):533-538.

Dalbeth N, Gosling AL, Gaffo A, Abhishek A. Gout. *Lancet*. 2021;397(10287):1843-1855.

Item 168

ANSWER: E

This patient's presentation is suggestive of systemic lupus erythematosus, in which the diagnosis is confirmed by a positive antinuclear antibody (ANA) test and positive anti–double-stranded DNA and anti-Smith antibodies.

Polymyalgia rheumatica usually occurs in older patients with bilateral joint pain and weakness in the shoulder joint who also have elevated erythrocyte sedimentation rates but do not have a positive ANA test or other positive autoantibodies. Psoriatic arthritis usually presents as a polyarthritis and is not associated with a positive ANA test. Rheumatoid arthritis typically presents with morning stiffness and symmetrical polyarthritis in small joints. Septic arthritis typically has an acute presentation involving a single joint with findings of erythema, warmth, and leukocytosis.

References
Foster ZJ, Day AL, Miller J. Polyarticular joint pain in adults: evaluation and differential diagnosis. *Am Fam Physician*. 2023;107(1):42-51.

Lam NCV, Brown JA, Sharma R. Systemic lupus erythematosus: diagnosis and treatment. *Am Fam Physician*. 2023;107(4):383-395.

Item 169

ANSWER: D

Glaucoma is defined as a group of eye diseases that damage the optic nerve. It is often, but not always, accompanied by increased intraocular pressure. An increased cup to disc ratio (cupping) is an abnormality that is associated with glaucoma. This has been defined as a ratio >0.3–0.5. Retinal vessel changes are not associated with glaucoma. Papilledema is a swelling of the optic disc that is generally caused by increased intracranial pressure.

Reference
Michels TC, Ivan O. Glaucoma: diagnosis and management. *Am Fam Physician*. 2023;107(3):253-262.

Item 170

ANSWER: C

Peppermint oil has evidence of benefit in alleviating symptoms related to irritable bowel syndrome (IBS) and is recommended by the American College of Gastroenterologists, the American Gastroenterological Association, and the British Society of Gastroenterology in their clinical practice guidelines. Peppermint oil is classified as an antispasmodic, and it is thought to have a relaxant effect on smooth muscle due to the blockade of calcium channels. Enteric-coated formulations are recommended to avoid esophageal reflux that may occur due to relaxation of the lower esophageal sphincter. Bismuth subsalicylate, omega-3 fatty acids, *Hypericum perforatum* (St John's wort), and wheat bran are not evidence-based recommendations for the management of IBS in any guidelines. Furthermore, wheat bran is a source of insoluble fiber, and soluble fiber is recommended for IBS.

References
Lacy BE, Pimentel M, Brenner DM, et al. ACG clinical guideline: management of irritable bowel syndrome. *Am J Gastroenterol*. 2021;116(1):17-44.

Lembo A, Sultan S, Chang L, Heidelbaugh JJ, Smalley W, Verne GN. AGA clinical practice guideline on the pharmacological management of irritable bowel syndrome with diarrhea. *Gastroenterology*. 2022;163(1):137-151.

Vasant DH, Paine PA, Black CJ, et al. British Society of Gastroenterology guidelines on the management of irritable bowel syndrome. *Gut*. 2021;70(7):1214-1240.

Item 171

ANSWER: D

An abnormal chest examination, including grunting and retractions, is one of the physical examination findings most predictive of community-acquired pneumonia in pediatric patients and one of the criteria used in the Pediatric Acute Febrile Respiratory Illness rule. Nasal drainage and the absence of significant fever are negative predictors in this rule. Cough that disrupts sleep is a common reason for children to be seen by a physician for medical care, but it is not necessarily suggestive of pneumonia. Pneumococcal vaccination decreases a child's risk for significant bacterial community-acquired pneumonia.

References

Chan FYY, Lui CT, Tse CF, Poon KM. Decision rule to predict pneumonia in children presented with acute febrile respiratory illness. *Am J Emerg Med*. 2020;38(12):2557-2563.

Katz SE, Williams DJ. Pediatric community-acquired pneumonia in the United States: changing epidemiology, diagnostic and therapeutic challenges, and areas for future research. *Infect Dis Clin North Am.* 2018;32(1):47-63.

Kobayashi M, Farrar JL, Gierke R, et al. Use of 15-valent pneumococcal conjugate vaccine among US children: updated recommendations of the Advisory Committee on Immunization Practices–United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2022;71(37):1174-1181.

Murgia V, Manti S, Licari A, De Filippo M, Ciprandi G, Marseglia GL. Upper respiratory tract infection-associated acute cough and the urge to cough: new insights for clinical practice. *Pediatr Allergy Immunol Pulmonol*. 2020;33(1):3-11.

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

Item 172

ANSWER: B

Symptom management at the end of life aims to provide comfort and dignity for patients and their families. One of the common symptoms at the end of life is excessive oropharyngeal secretions. This can cause increased noisy breathing in the last hours to days of life, often referred to as a death rattle. Terminal secretions do not result in airway obstruction or respiratory distress for the patient but can be distressing to family members who are concerned that the patient is "drowning" in secretions. Family members often request that suctioning be performed; however, this does not reduce the rattling noise and can cause further distress to the patient.

Anticholinergic medications can be used to reduce the volume of secretions and noisy breathing, but there is little high-quality evidence to support this practice. Glycopyrrolate, hyoscyamine, and transdermal scopolamine may also be used. Neither chlorpheniramine/hydrocodone nor hydroxyzine has a role in typical end-of-life care. Haloperidol is effective for the treatment of delirium. Opioids such as morphine are used to treat dyspnea (SOR B) but have no effect on secretions.

References

Albert RH. End-of-life care: managing common symptoms. *Am Fam Physician*. 2017;95(6):356-361.

Lim RBL. End-of-life care in patients with advanced lung cancer. *Ther Adv Respir Dis*. 2016;10(5):455-467.

Item 173

ANSWER: E

Person-first language focuses on the patient and not the condition and is an important humanizing strategy that should be used in clinical documentation. For example, "a patient with diabetes" is preferred over referring to a patient as "a diabetic." It is important to avoid blaming the patient by attributing responsibility for their condition to them. Documenting that a patient "refuses" a recommendation carries a negative connotation and it is preferable to use a neutral alternative such "chooses." Social identifiers such as race, ethnicity, or socioeconomic status can be markers of marginalization and trigger unconscious bias. These identifiers should not be used to lead the history of present illness or included in a "one-liner." Instead, they can be included in the social history if verified by the patient.

Reference

Healy M, Kidia K. The power in our words: reducing bias in clinical communication. *Am Fam Physician*. 2023;107(5):454-455.

Item 174

ANSWER: A

This patient has dyspareunia, and the most likely etiology is vaginal dryness related to her use of combined oral contraceptives. The levonorgestrel IUD has not been associated with vaginal dryness, and changing her contraception would likely alleviate her symptoms and provide ongoing desired contraception. She can use vaginal lubricants or moisturizers for vaginal dryness. She does not meet the diagnostic criteria for vulvodynia, vaginismus, or myofascial pelvic pain syndrome. Trigger point injections, cognitive behavioral therapy, and myofascial pelvic physical therapy are possible treatments for vaginismus or vulvodynia. OnabotulinumtoxinA is used off-label as a treatment option for interstitial cystitis or female chronic pelvic pain but only after other treatments have failed.

References

Both S, Lew-Starowicz M, Luria M, et al. Hormonal contraception and female sexuality: position statements from the European Society of Sexual Medicine (ESSM). *J Sex Med*. 2019;16(11):1681-1695.

Hill DA, Taylor CA. Dyspareunia in women. *Am Fam Physician*. 2021;103(10):597-604.

Smith NK, Jozkowski KN, Sanders SA. Hormonal contraception and female pain, orgasm and sexual pleasure. *J Sex Med*. 2014;11(2):462-470.

Item 175

ANSWER: B

Cannabinoid hyperemesis syndrome (CHS) has become more common with increased legalization and acceptance of cannabis use. While it can be used as an antiemetic, cannabis can also promote vomiting in susceptible individuals who have a significant history of cannabinoid use. Long duration, higher frequency of use, and higher amounts of cannabis use are all risk factors for CHS. Symptomatic relief with hot showers or baths is not found in abdominal migraines, carcinoid syndrome, or peptic ulcer disease. Pancreatitis would cause elevations in lipase levels and some findings on imaging would be expected. Nausea from the other causes is generally relieved with traditional antiemetics. Carcinoid syndrome also causes episodic symptoms such as facial flushing, diarrhea, hypotension, and tachycardia, but not nausea or vomiting.

References
Angus-Leppan H, Saatci D, Sutcliffe A, Guiloff RJ. Abdominal migraine. *BMJ*. 2018;360:k179.

Fashner J, Gitu AC. Diagnosis and treatment of peptic ulcer disease and *H. pylori* infection. *Am Fam Physician*. 2015;91(4):236-242.

Ito T, Lee L, Jensen RT. Carcinoid-syndrome: recent advances, current status and controversies. *Curr Opin Endocrinol Diabetes Obes*. 2018;25(1):22-35.

Perisetti A, Gajendran M, Dasari CS, et al. Cannabis hyperemesis syndrome: an update on the pathophysiology and management. *Ann Gastroenterol*. 2020;33(6):571-578.

Sorensen CJ, DeSanto K, Borgelt L, Phillips KT, Monte AA. Cannabinoid hyperemesis syndrome: diagnosis, pathophysiology, and treatment-a systematic review. *J Med Toxicol*. 2017;13(1):71-87.

Item 176

ANSWER: A

Patients with venous thromboembolism (VTE) should receive anticoagulant therapy for at least 3 months to reduce the risk for further embolization. In patients with persistent provoking factors such as active cancer or antiphospholipid syndrome, or who have had previous episodes of unprovoked VTE, the long-term risk for recurrence is high and indefinite anticoagulation therapy is recommended. The risk for VTE is much higher with active cancer compared to COPD, poorly controlled type 2 diabetes, severe intermittent asthma, and stage 3 chronic kidney disease.

Reference
Ortel TL, Neumann I, Ageno W, et al. American Society of Hematology 2020 guidelines for management of venous thromboembolism: treatment of deep vein thrombosis and pulmonary embolism. *Blood Adv*. 2020;4(19):4693-4738.

Item 177

ANSWER: B

In postmenopausal women younger than age 65, the U.S. Preventive Services Task Force recommendations for osteoporosis screening include assessing for osteoporosis risk factors (parental history of hip fracture, smoking, high alcohol consumption, or low body weight) and use of a clinical risk assessment tool if 1 or more risk factors are present.

Reference
US Preventive Services Task Force; Curry SJ, Krist AH, et al. Screening for osteoporosis to prevent fractures: US Preventive Services Task Force recommendation statement. *JAMA*. 2018;319(24):2521-2531.

Item 178

ANSWER: B

The patient history and physical examination findings are most consistent with degenerative cervical myelopathy, a condition in which spinal cord dysfunction develops due to compression in the neck. Spinal cord compression can be due to disk herniation, ligament hypertrophy, or osteophyte formation, sometimes collectively called spondylosis. Symptoms can initially be nonspecific and subtle, and they can overlap with less serious conditions. Loss of hand dexterity, ataxia, and urinary urgency can be signs of spinal cord compression and warrant a comprehensive neurologic examination. The development of upper motor neuron signs including hyperreflexia, a positive Hoffmann sign (digital reflex of the fingers), and clonus are key findings that warrant urgent evaluation with MRI.

Facet joint arthropathy causes more focal pain and is not associated with neurologic symptoms. Cervical radiculopathy involves compression of the nerve root rather than the spinal cord. Symptoms include shooting pain with sensory changes and weakness in a dermatomal distribution. A vertebral compression fracture leads to focal pain in the neck at the site of the fracture without neurologic symptoms. Osteomyelitis also causes more focal pain in the setting of systemic symptoms such as malaise and fever.

References
Childress MA, Stuek SJ. Neck pain: initial evaluation and management. *Am Fam Physician*. 2020;102(3):150-156.

Davies BM, Mowforth OD, Smith EK, Kotter MRN. Degenerative cervical myelopathy. *BMJ*. 2018;360:k186.

Item 179

ANSWER: B

This patient likely has polycystic ovary syndrome (PCOS) based on the clinical history and physical examination findings. Letrozole is an aromatase inhibitor that decreases the amount of estrogen produced by the body and is considered the first-line treatment for inducing ovulation in women with PCOS.

GLP-1 receptor agonists reduce the degree of metabolic syndrome in patients with PCOS and are not indicated for ovulation induction. Metformin is inferior to letrozole for ovulation induction in patients with PCOS. Furthermore, this patient's hemoglobin A_{1c} indicates that she does not have prediabetes or diabetes mellitus. Spironolactone is an antiandrogen and is used to treat many PCOS symptoms, such as hirsutism, but does not induce ovulation.

References

Goodman NF, Cobin RH, Futterweit W, et al. American Association of Clinical Endocrinologists, American College of Endocrinology, and Androgen Excess and PCOS Society Disease State clinical review: guide to the best practices in the evaluation and treatment of polycystic ovary syndrome-part 1. *Endocr Pract*. 2015;21(11):1291-1300.

Goodman NF, Cobin RH, Futterweit W, et al. American Association of Clinical Endocrinologists, American College of Endocrinology, and Androgen Excess and PCOS Society Disease State clinical review: guide to the best practices in the evaluation and treatment of polycystic ovary syndrome-part 2. *Endocr Pract*. 2015;21(12):1415-1426.

Shrivastava S, Conigliaro RL. Polycystic ovarian syndrome. *Med Clin North Am.* 2023;107(2):227-234.

Wilkinson LD, Brady PH, Gin GT, Rosenblum E. Female pelvic conditions: polycystic ovary syndrome. *FP Essent*. 2022;515:26-31.

Williams T, Moore JB, Regehr J. Polycystic ovary syndrome: common questions and answers. *Am Fam Physician*. 2023;107(3):264-272.

Item 180

ANSWER: E

The World Health Organization’s major diagnostic criteria for polycythemia vera include an elevated hemoglobin or hematocrit level, abnormal bone marrow biopsy results, and the presence of the Janus kinase 2 (JAK2) genetic mutation, found in 98% of cases. The only minor criterion is a subnormal erythropoietin level, which helps distinguish polycythemia vera from common causes of secondary erythrocytosis such as smoking, sleep apnea, and testosterone use.

Reference

Fox S, Griffin L, Robinson Harris D. Polycythemia vera: rapid evidence review. *Am Fam Physician*. 2021;103(11):680-687.

Item 181

ANSWER: E

This patient has common post-stroke complications and will benefit from physical therapy to address his mobility and spasticity, and to prevent falls. Repeat neuroimaging would only be indicated with a change in neurologic examination, including new focal neurologic deficits. His diabetes mellitus is adequately controlled and further increasing his insulin puts him at increased risk of hypoglycemia. Lorazepam is not first-line therapy for spasticity and is also associated with increased fall risk. Depression is common post stroke, but this patient is not reporting symptoms of low mood and has a normal Patient Health Questionnaire–9 score.

Reference

Larson ST, Ray BE, Wilbur J. Ischemic stroke management: posthospitalization and transition of care. *Am Fam Physician*. 2023;108(1):70-77.

Item 182

ANSWER: D

Maintaining a systolic blood pressure ≤130 mm Hg in midlife has been shown to reduce the risk for developing dementia. While reading, playing music, and speaking a foreign language have demonstrated benefits in maintaining cognition, there is no good-quality evidence to show that computer-based memory training games prevent cognitive decline. Extremes of alcohol use (both long-term abstinence and abuse) are associated with an increased risk for dementia. Most people who are positive for biomarkers associated with Alzheimer disease will not go on to develop the disease. Additionally, there is no evidence that presymptomatic identification of Alzheimer disease is beneficial. Hormone therapy with estrogen and progesterone is an effective treatment for vasomotor symptoms of menopause but is associated with an increased risk for dementia when administered in women ≥65 years of age. For women in their 40s and 50s, hormone therapy with estrogen only has demonstrated a significant decrease in dementia, while estrogen plus progesterone therapy has demonstrated a nonsignificant decrease.

References

Gartlehner G, Patel SV, Reddy S, Rains C, Schwimmer M, Kahwati L. Hormone therapy for the primary prevention of chronic conditions in postmenopausal persons: updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2022;328(17):1747-1765.

Gates NJ, Vernooij RW, Di Nisio M, et al. Computerised cognitive training for preventing dementia in people with mild cognitive impairment. *Cochrane Database Syst Rev*. 2019;3(3):CD012279.

Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet*. 2020;396(10248):413-446.

Nerattini M, Jett S, Andy C, et al. Systematic review and meta-analysis of the effects of menopause hormone therapy on risk of Alzheimer's disease and dementia. *Front Aging Neurosci.* 2023;15:1260427.

Item 183

ANSWER: E

Racemic methylphenidate has been studied in breastfeeding mothers and drug levels in breast milk were found to be about 0.2% of the adult dose. Drug levels were undetectable in breastfed infants and the infants had no long-term growth or developmental issues. Methylphenidate can reduce serum prolactin levels, but this has not been shown to have any clinical impact on milk supply. Less is known about amphetamine in breastfeeding, but milk and infant serum levels are significantly higher than with methylphenidate. Atomoxetine and guanfacine have no reliable data in breastfeeding and should be avoided until more is known. Clonidine has been shown to be present in significant amounts in breast milk and serum from breastfed infants (up to 50% of the maternal serum levels). While no adverse effects have been shown, this high level of medication in the infant raises concerns, and experts recommend avoiding clonidine while breastfeeding.

References

Anderson PO. Stimulant therapy during breastfeeding. *Breastfeed Med*. 2021;16(12):931-932.

Spencer JP, Thomas S, Trondsen Pawlowski RH. Medication safety in breastfeeding. *Am Fam Physician*. 2022;106(6):638-644.

Item 184

ANSWER: C

The focused assessment with sonography for trauma (FAST) evaluates the pericardium and 3 potential spaces within the peritoneal cavity for hemoperitoneum and hemopericardium. This bedside examination can be completed in less than 5 minutes, so it is ideal for emergency department settings. FAST has replaced diagnostic peritoneal lavage as a bedside evaluation for bleeding. A Cochrane review found that FAST has a 96% specificity but only a 74% sensitivity for detecting internal bleeding. The sensitivity in children was found to be even lower at 62%. Therefore, while a positive result will almost always be reliable and should prompt immediate bleeding control measures, a negative result carries the risk of being a false negative and must be confirmed by additional imaging such as CT.

References

Arnold MJ, Jonas CE, Carter RE. Point-of-care ultrasonography. *Am Fam Physician*. 2020;101(5):275-285.

Stengel D, Leisterer J, Ferrada P, Ekkernkamp A, Mutze S, Hoenning A. Point-of-care ultrasonography for diagnosing thoracoabdominal injuries in patients with blunt trauma. *Cochrane Database Syst Rev*. 2018;12(12):CD012669.

Item 185

ANSWER: E

According to the GOLD Spirometry Classification, an FEV_1/FVC ratio <0.70 and an FEV_1 ≥50% and <80% of predicted is stage 2 COPD. Initial inhaler pharmacotherapy can be guided by the GOLD ABCD assessment that integrates symptoms and exacerbations. Moderate exacerbations require either an oral antibiotic, an oral corticosteroid, or both, while a severe exacerbation results in an emergency department visit or hospitalization. Patients with 2 or more moderate exacerbations or 1 or more hospitalizations, such as this patient, should be prescribed a long-acting muscarinic antagonist (LAMA) as first-line therapy. Monotherapy with this group of medications reduces symptoms, decreases exacerbations, and decreases hospitalizations.

Inhaled corticosteroids (ICS) such as fluticasone propionate are not recommended as monotherapy for COPD, particularly for those who have had pneumonia. Using a long-acting β-agonist (LABA) with an ICS is less effective at reducing exacerbations and increases the risk for pneumonia. Monotherapy with a LABA such as salmeterol reduces exacerbations requiring hospitalization, but symptoms are better controlled when a LABA is used in combination with a LAMA. Short-acting β-adrenergic agonists and short-acting muscarinic antagonists are appropriate for acute exacerbations rather than prevention.

References

Arnold M, Vordtriede C, Chadwick C, Trivette E. COPD inhaler therapy: a path to success. *J Fam Pract*. 2022;71(7):280-289.

Global Initiative for Chronic Obstructive Lung Disease (GOLD). Spirometry for health care providers. 2010.

Item 186

ANSWER: C

In its 2018 clinical practice guideline, the Infectious Diseases Society of America summarized its recommendations on the diagnosis and management of seasonal influenza, including institutional outbreak management. These recommendations include active surveillance for additional cases any time a resident of a long-term care facility is diagnosed with laboratory-confirmed influenza. Influenza can spread rapidly in the long-term care setting and outbreak control measures should be implemented immediately. The risk for severe disease and complications from influenza are high in frail older adults, and those with cognitive impairment may be less able to describe their symptoms, making case-finding more difficult. When a resident develops any respiratory symptoms during an influenza outbreak, empiric antiviral treatment should be initiated as soon as possible without waiting for diagnostic testing results. Residents who have been exposed to those with influenza should receive chemoprophylaxis as soon as possible, regardless of their vaccination status. It is not necessary to initiate chemoprophylaxis for residents who are located on remote units.

Reference

Uyeki TM, Bernstein HH, Bradley JS, et al. Clinical practice guidelines by the Infectious Diseases Society of America: 2018 update on diagnosis, treatment, chemoprophylaxis, and institutional outbreak management of seasonal influenza. *Clin Infect Dis*. 2019;68(6):e1-e47.

Item 187

ANSWER: B

The U.S. Preventive Services Task Force (USPSTF) recommends against cervical cancer screening for women >65 years of age with normal Papanicolaou (Pap) smears, who have had adequate prior screening, and who otherwise are not at increased risk for cervical cancer (D recommendation). The most recent definition of "adequate prior screening" given by the American Cancer Society (ACS) is 3 consecutive negative cytology results, 2 consecutive negative co-testing results, or 2 consecutive negative high-risk HPV tests in the 10 years prior to discontinuation of screening, with the most recent test having occurred within the relevant recommended testing interval. The recommended interval is every 3 years for cytology, and 5 years for both high-risk HPV and co-testing.

Importantly, USPSTF guidelines do not apply to individuals who are at increased risk for cervical cancer, including women with a history of high-grade precancerous cervical lesions or cervical cancer. The ACS and the American Society of Colposcopy and Cervical Pathology (ASCCP) guidelines recommend continuation of cervical cancer screening for women with a history of a high-grade precancerous lesion (defined as cervical intraepithelial neoplasia [CIN] grade 2 or higher) for a minimum of 25 years beyond the treatment of the lesion, even if this extends beyond 65 years of age. Thus, if this patient had a history of treatment for a high-grade lesion 15 years ago, this would warrant continued screening for an additional 10 years.

The presence of a new sex partner should not impact the decision to discontinue screening for women who otherwise are eligible for cessation of screening. In fact, ACS recommendations apply to all asymptomatic people with a cervix, without regard to their sexual history. In contrast to several other common cancer types, cervical cancer risk is not associated with a familial/genetic inheritance pattern; therefore, a family history of cervical cancer, even in a first-degree relative, should not impact a cervical cancer screening decision.

References

Fontham ETH, Wolf AMD, Church TR, et al. Cervical cancer screening for individuals at average risk: 2020 guideline update from the American Cancer Society. *CA Cancer J Clin*. 2020;70(5):321-346.

Perkins RB, Guido RS, Castle PE, et al. 2019 ASCCP risk-based management consensus guidelines for abnormal cervical cancer screening tests and cancer precursors. *J Low Genit Tract Dis*. 2020;24(2):102-131.

US Preventive Services Task Force. Final recommendation statement: cervical cancer: screening. Updated August 21, 2018.

Item 188

ANSWER: B

Aortic stenosis (AS) occurs primarily in older adults and is a result of narrowing of the aortic valve area due to damage from the aging process that involves lipid accumulation, calcification, and inflammation. While survival rates in patients with asymptomatic AS match those without AS, survival rates drop dramatically once symptoms develop. Because there is no effective medical management for preventing the progression of AS, recognizing indications for aortic valve replacement (AVR) results in improved survival and symptoms. Any symptomatic patient with severe AS (maximum transaortic velocity ≥4.0 m/s or mean pressure gradient ≥40 mm Hg) should undergo AVR. It is difficult to determine whether this patient is truly symptomatic from AS, but a left ventricular ejection fraction <50% would support a need for AVR in this patient. An abnormal exercise stress test, rather than a normal test, would also indicate a need for AVR. Finally, a need for other cardiac surgery, such as coronary artery bypass grafting, would also prompt AVR. An elevated atherosclerotic cardiovascular disease risk should prompt consideration of statin and aspirin prophylaxis but does not play a role in deciding when to perform AVR. A need for a noncardiac, elective surgical intervention would not lead to a recommendation for AVR due to the high-risk nature of AVR.

Reference

Grimard BH, Safford RE, Burns EL. Aortic stenosis: diagnosis and treatment. *Am Fam Physician*. 2016;93(5):371-378.

Item 189

ANSWER: D

This patient presents with adhesive capsulitis, manifested as the typical cardinal symptoms of pain, stiffness, and dysfunction of the affected shoulder. A combination of glenohumeral or subacromial corticosteroid injection and physical therapy is most likely to produce early and sustained improvement in symptoms and joint functioning. Prolonged use of a sling would worsen the condition. Referral for surgery may be indicated after a 3-month trial of conservative treatment fails. While extracorporeal shock wave therapy has shown benefit for frozen shoulder, its current role is as an adjunct to other primary therapies.

References

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

Zhang R, Wang Z, Liu R, Zhang N, Guo J, Huang Y. Extracorporeal shockwave therapy as an adjunctive therapy for frozen shoulder: a systematic review and meta-analysis. *Orthop J Sports Med*. 2022:10(2).

Item 190

ANSWER: A

In the absence of risk factors such as abnormal EEG results, the presence of a predisposition to seizures, or an etiology such as severe head trauma or cerebral palsy, anti-epileptic drug (AED) therapy is not indicated after a first unprovoked childhood seizure. There is no significant difference in 1- to 2-year seizure remission rates between starting AED therapy after the first or second seizure, and there are significant risks associated with AED treatment. AED monotherapy should be attempted before starting AED combination therapy.

Reference

Liu G, Slater N, Perkins A. Epilepsy: treatment options. *Am Fam Physician*. 2017;96(2):87-96.

Item 191

ANSWER: D

This patient is experiencing a large local reaction to an insect sting, occurring between a few days to 1 week after the initial sting. This occurs in about 19% of reactions and carries a 5%–10% risk for a systemic reaction in subsequent exposures. The treatment is prednisone, 40–60 mg daily for 3–5 days. This is not an infection but rather a reaction to the Hymenoptera sting, so oral or topical antibiotics are not indicated. Antihistamines such as diphenhydramine are useful for pruritus but are not a treatment for the reaction.

Reference

Herness J, Snyder MJ, Newman RS. Arthropod bites and stings. *Am Fam Physician*. 2022;106(2):137-147.

Item 192

ANSWER: A

If vagal maneuvers are not effective in the management of stable supraventricular tachycardia (SVT), the most appropriate next step is treatment with intravenous adenosine at an initial dose of 6 mg. Atropine is a treatment option for bradycardia, particularly in the setting of heart block. Diltiazem or metoprolol may be used acutely in atrial fibrillation or in the prevention of SVT. Synchronized cardioversion is indicated in patients with SVT who become hypotensive or unresponsive.

Reference

Page RL, Joglar JA, Caldwell MA, et al. 2015 ACC/AHA/HRS guideline for the management of adult patients with supraventricular tachycardia: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Circulation*. 2016;133(14):e471-e505.

Item 193

ANSWER: D

Sacroiliac joint dysfunction is commonly seen in primary care and is an important consideration in the evaluation of low back pain. It often occurs during pregnancy and post partum. Other inciting incidents include a motor vehicle accident or a mechanical fall onto the buttocks. It can be associated with ankylosing spondylitis and other spondyloarthropathies; however, the etiology in this case is more likely to be childbirth. Symptoms often include pain at the sacroiliac joint that worsens with climbing stairs, lying on the affected side, prolonged standing and sitting, and weight-bearing on the leg of the affected side. Examination findings include tenderness that is inferomedial to the posterior superior iliac spine. A number of provocation tests for sacroiliac joint dysfunction can help to confirm the diagnosis. NSAIDs, physical therapy, and joint manipulation are first-line treatments. Pelvic belts, corticosteroid injections, and sacroiliac joint fusion are used for refractory cases.

Lumbar strain is in the differential diagnosis, but sacroiliac joint dysfunction is more likely given this patient's history and the duration and location of tenderness. Piriformis syndrome is usually unilateral and causes sciatic-like symptoms. Pudendal nerve entrapment would cause perineal pain or labial numbness. Spondyloarthropathies are associated with sacroiliac joint inflammation but are not as likely in this postpartum patient.

References
Nejati P, Safarcherati A, Karimi F. Effectiveness of exercise therapy and manipulation on sacroiliac joint dysfunction: a randomized controlled trial. *Pain Physician*. 2019;22(1):53-61.

Newman DP, Soto AT. Sacroiliac joint dysfunction: diagnosis and treatment. *Am Fam Physician*. 2022;105(3):239-245.

Telli H, Telli S, Topal M. The validity and reliability of provocation tests in the diagnosis of sacroiliac joint dysfunction. *Pain Physician*. 2018;21(4):E367-E376.

Item 194

ANSWER: A

Most elder abuse occurs in the home and is perpetrated by family members (90% of all cases). A small proportion of older adults live in nursing homes, with only 4% of abuse perpetrated by paid caregivers.

Risk factors for elder abuse include shared living arrangements, increased age, decreased physical health, cognitive impairment, disruptive behaviors, alcohol misuse, and social isolation. Caregiver characteristics associated with abuse include mental illness, substance abuse, and dependence on the victim (often financially).
There are validated screening instruments available, notably the Elder Abuse Suspicion Index, but the U.S. Preventive Services Task Force has found insufficient evidence for screening older adults for abuse and neglect when there are no recognized signs and symptoms of abuse. Identification of elder abuse is a professional responsibility of family physicians. However, physicians report a very small number of elder abuse cases (1.4%). Family members, social service workers, friends, and law enforcement most commonly report abuse. Most states mandate reporting of elder abuse but there is a dearth of training for physicians in recognizing elder abuse. Signs are often subtle and physical findings are not always evident.

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

US Preventive Services Task Force. Final recommendation statement: intimate partner violence, elder abuse, and abuse of vulnerable adults: screening. October 23, 2018.

Item 195

ANSWER: A

A patient describing a headache as the worst headache of their life can be a red-flag symptom of an intracranial hemorrhage, and CT of the head without contrast is the recommended next step in evaluation. Contrast should not be used because it can obscure the signs of bleeding. If a subarachnoid hemorrhage is suspected, CT of the head should be completed before performing a lumbar puncture to ensure there is no evidence of intracranial hemorrhage or midline shift.

References

Hainer BL, Matheson EM. Approach to acute headache in adults. *Am Fam Physician*. 2013;87(10):682-687.

Viera AJ, Antono B. Acute headache in adults: a diagnostic approach. *Am Fam Physician*. 2022;106(3):260-268.

Item 196

ANSWER: E

Benzodiazepine prescriptions and overdoses have increased over the last 15 years and long-term benzodiazepine use is rarely recommended. Current recommendations include the following: substitution of multiple benzodiazepines for a single longer-acting benzodiazepine such as diazepam, tapering of medication over weeks to months, and use of cognitive behavioral therapy. Buprenorphine is indicated for patients with opioid use disorder and can be helpful for patients who are taking both opioids and benzodiazepines. Flumazenil is an intravenous injection that is used for benzodiazepine overdoses and reversing benzodiazepine sedation. It is not used in maintenance therapy for benzodiazepine cessation.

References

Guaiana G, Barbui C. Discontinuing benzodiazepines: best practices. *Epidemiol Psychiatr Sci*. 2016;25(3):214-216.

Ogbonna CI, Lembke A. Tapering patients off of benzodiazepines. *Am Fam Physician*. 2017;96(9):606-610.

Robertson S, Peacock EE, Scott R. Benzodiazepine use disorder: common questions and answers. *Am Fam Physician*. 2023;108(3):260-266.

Soyka M. Treatment of benzodiazepine dependence. *N Engl J Med*. 2017;376(12):1147-1157.

Item 197

ANSWER: B

This patient most likely has seasonal allergic rhinitis that has not responded to empiric treatment. The most appropriate next step in diagnosis is skin allergen testing. Serum allergy testing is more expensive and less specific than skin allergen testing. It also does not provide the immediate results of skin allergen testing.

A CBC will likely show eosinophilia, given the patient's likely diagnosis of allergic rhinitis. However, this is a nonspecific finding. This patient likely does not have a true respiratory illness such as pneumonia, so a chest x-ray would not be appropriate. Sinus CT likely will not lead to actionable management. It is also expensive and carries the risk for radiation exposure, which needs to be weighed carefully in a pediatric patient.

References

Savard DJ, Ursua FG, Gaddey HL. Smell and taste disorders in primary care. *Am Fam Physician*. 2023;108(3):240-248.

Siddiqui ZA, Walker A, Pirwani MM, Tahiri M, Syed I. Allergic rhinitis: diagnosis and management. *Br J Hosp Med (Lond)*. 2022;83(2):1-9.

Weaver-Agostoni J, Kosak Z, Bartlett S. Allergic rhinitis: rapid evidence review. *Am Fam Physician*. 2023;107(5):466-473.

Item 198

ANSWER: A

Achalasia is a smooth muscle motility disorder that impairs swallowing of both solids and liquids. In contrast, anatomic causes of dysphagia that impede the lumen of the esophagus through mass effect or inflammation, such as eosinophilic esophagitis, esophageal cancer, esophageal stricture, and Schatzki rings, typically impair swallowing of solids but not liquids.

Reference

Abdel Jalil AA, Katzka DA, Castell DO. Approach to the patient with dysphagia. *Am J Med*. 2015;128(10):1138.e17-1138.e23.

Item 199

ANSWER: C

This patient most likely has a perforated peptic ulcer and the recommended test is CT of the abdomen and pelvis. Aortic ultrasonography is not productive in this case, as the patient's symptoms are unlikely to be caused by an abdominal aortic aneurysm. Abdominal radiography lacks the definition to visualize a perforated peptic ulcer. This patient's abdomen is not distended, and it is unlikely that abdominal paracentesis will yield the diagnosis or be therapeutic. Exploratory laparotomy is excessive and premature, as CT is diagnostic and less invasive.

References

Bhavsar AK, Gelner EJ, Shorma T. Common questions about the evaluation of acute pelvic pain. *Am Fam Physician*. 2016;93(1):41-48.

Morley EJ, Bracey A, Reiter M, Thode HC Jr, Singer AJ. Association of pain location with computed tomography abnormalities in emergency department patients with abdominal pain. *J Emerg Med*. 2020;59(4):485-490.

Yew KS, George MK, Allred HB. Acute abdominal pain in adults: evaluation and diagnosis. *Am Fam Physician*. 2023;107(6):585-596.

Item 200

ANSWER: D

Tinnitus is a common problem that is experienced by up to 25% of adults, although <10% of affected individuals report bothersome symptoms that impair sleep, focus, emotions, or general quality of life. Audiometry should be performed for patients with severe or persistent symptoms, as hearing loss is a common comorbid finding. Evaluation for potential structural causes with MRI or CT of the temporal bone is indicated for any of the following: a pulsatile quality of the tinnitus, unilateral tinnitus, asymmetric hearing loss, or focal neurologic findings. Of the options given in this clinical scenario, only pulsatile tinnitus would provide an indication for head imaging.
While patients with tinnitus may be more susceptible to mood disturbances due to the adverse impact on quality of life and functioning that their symptoms may cause, an associated onset of major depression would not provide a reason to order diagnostic head imaging. Bilateral hearing loss on audiometry is often noted in the setting of tinnitus and does not suggest the presence of a structural lesion. No medication strategies have proven effective to treat tinnitus; thus, prescribing a tricyclic antidepressant would not be expected to provide benefit. Symptoms often persist for months to years; the duration of symptoms alone does not provide a reason to order head imaging.

Reference

Bauer CA. Tinnitus. *N Engl J Med*. 2018;378(13):1224-1231.