ABIM Practice Test

1. An ER patient is a 68-year-old man, who awoke with palpitations, chest pain, dyspnea and dizziness. He complains his heart is "pounding" but denies any history of heart disease or hypertension. His blood pressure is 85/60 mm/Hg, and his pulse is rapid and irregular. Crackles are audible at his lung bases. His routine lab work is normal, including a troponin level. His EKG shows atrial fibrillation with a ventricular response of 130/minute. What is the most appropriate treatment?

a. Intravenous digoxin
b. Intravenous beta-blocker
c. Immediate cardioversion
d. Delayed cardioversion after anticoagulation

2. A 57-year-old man presents with intermittent, mid-sternal chest pain, usually lasting 5 to10 minutes. It occurs both with effort and at rest. The pain radiates to his throat and sometimes responds to antacids. He takes amlodipine (Norvasc) 10 mg daily for high blood pressure; it is his only regular medication. He discontinued smoking about age 50. He denies other significant medical problems. He has a family history of hypertension and Type 2 diabetes. On examination, his blood pressure is 135/85 mm/Hg, pulse 76 and regular, height 70 inches, and weight 210 lbs. His chest is clear to auscultation, with no cardiac murmurs or rubs. The balance of the examination is negative. His electrocardiogram is normal. What is the next logical procedure most likely to provide a diagnosis?

a. Troponin level
b. EGD endoscopy
c. Coronary angiography
d. Technetium Tc99m Sestamibi stress test

3. A 52-year-old man with Type 2 diabetes presents at the office for his annual physical examination. His only medication is metformin. His recent hemoglobin A1C result was 6.5%, and serum creatinine was 1.8 mg/dL. His blood pressure is elevated to 170/75 mm/Hg, but the rest of his examination is negative. His chest x-ray is normal, but his EKG suggests left ventricular hypertrophy. What drug is most appropriate to treat his hypertension?

a. Thiazide diuretic
b. Angiotensin receptor blocker (ARB)
c. Beta-blocker
d. Calcium channel blocker (CCB)

4. A middle-aged man presented to an Emergency Room with chest pain. Laboratory and EKG findings indicated a non-ST elevation myocardial infarction (NSTEMI). His angiography showed a 95% obstruction in a major branch of his left anterior descending artery (LAD). His other arteries appeared less than 40% obstructed. The surgeon performed balloon angioplasty and placed a drug-eluting stent in the severely obstructed vessel. The patient reports he is pain-free after the procedure. His resting EKG is now normal and an isotopic stress test fails to show ischemia. The patient should be discharged on all the following drugs EXCEPT for which medication?

a. Clopidogrel
b. Warfarin
c. ACE inhibitor
d. Statin

5. When differentiating diastolic heart failure (DHF) from systolic heart failure (SHF), what point is important to remember?

a. The left ventricular ejection fraction (LVEF) is usually above 40% to 50% in a DHF patient
b. Diuretics are contraindicated in DHF
c. DHF has a poorer prognosis than SHF
d. Beta-blockers and calcium channel blockers have been shown to improve lifespan for DHF patients

6. A middle-aged female patient reports recurrent chest pain and two or three brief syncopal episodes. Clinical findings include a mid-systolic ejection murmur, with a prominent apex pulse, an S4 gallop, and a diminished carotid pulse. Her EKG shows a sinus rhythm with left ventricular hypertrophy. What is the most likely diagnosis and appropriate treatment?

a. Coronary artery disease and angioplasty
b. Calcific aortic stenosis and balloon aortic valvotomy
c. Calcific aortic stenosis and aortic valve replacement
d. Calcific aortic stenosis and medical therapy

7. A patient is a 65-year-old woman, who complains of intermittent chest pain and dyspnea on exertion. She takes a diuretic and an ACE inhibitor for hypertension. Her stress test indicated some septal reversibility. The Catheterization Laboratory reported an 80% obstruction in her LAD with collaterals from the RCA, and a 30% obstruction in her dominant RCA. Her left ventricular ejection fraction was 60%. Therefore, a surgeon performed angioplasty and inserted a stent for her. Shortly after returning to the CCU, the patient developed severe dyspnea, hypoxemia, hypotension, and chest discomfort. The physician observes no evidence of bleeding at her catheterization site. The Coagulation Laboratory reports her platelet count is 550,000/mm3, and her INR and PTT are normal, but her D-dimer is elevated to 6.0 µg/mL (normal <0.50 µg/mL). The patient is started on nasal oxygen. What is the most appropriate treatment option now?

a. Switch to unfractionated heparin intravenously
b. Vascular surgery consults to install a vena caval filter
c. Thrombolytic therapy with recombinant tissue-type plasminogen activator (TPA)
d. Cardiovascular surgical consult for emergency coronary bypass

8. A patient is a 40-year old woman, who was brought to the ER complaining of acute, severe upper and mid-abdominal pain, radiating from her epigastrium to her mid-back. She guards her abdomen. She denies alcohol abuse or prior abdominal surgery. She denies a recent change in her bowel habits, but her bowel sounds are markedly diminished. What is the most likely diagnosis and the laboratory or imaging test to establish this diagnosis?

a. Acute pancreatitis established by serum amylase
b. Small bowel obstruction established by plain films of the abdomen
c. Acute cholecystitis established by ultrasound of the gall bladder
d. Acute appendicitis established by CT of the abdomen

9. A 70-year-old man presents with brisk, maroon-color bleeding from his rectum. He has no history of bowel disease or previous gastrointestinal bleeding. He reports mild left lower quadrant pain for the past few days. His blood pressure is 140/70 mm/Hg, and his hemoglobin is 12 gm/dL. What is the most likely source of his bleeding and the initial diagnostic step?

a. Diverticular source diagnosed by barium enema
b. Diverticular source diagnosed by colonoscopy
c. Acute colitis diagnosed by colonoscopy
d. Cancer of the ascending colon diagnosed by colonoscopy

10. A 30-year-old man has a history of cramping, mid-to-lower abdominal pain, frequent diarrhea that is occasionally bloody, and a 12 lb. weight loss over the past six months. His gastrointestinal work-up disclosed Crohn's disease involving his terminal ileum, and scattered colonic lesions. The physician started him on prednisone 40 mg/day and he enjoyed considerable improvement in his symptoms over the next two weeks. However, when the physician tapered his dose to 20 mg/day, his disease flared up again. What is the next step for managing this patient?

a. Increase the prednisone and maintain him on this higher dose indefinitely
b. Temporarily increase the prednisone, add azathioprine, and then taper the steroid again
c. Segmental resection of his terminal ileum
d. Begin a 5-aminosalicylic acid containing drug

11. A 30-year-old male patient presents the clinic with fatigue, nausea, and dark urine for about a week. He denies sex with men or sexually-transmitted disease, but admits to some alcohol and heroin abuse, with needle sharing. He had mononucleosis as a teenager, but has neither a history of hepatobiliary disease, nor blood transfusions. The lab reports his aminotransferases (ALT) are markedly elevated, and his LDH, direct/total bilirubin, and alkaline phosphatase (ALP) are mildly elevated. These tests are negative: HIV; VDRL; Hepatitis A, B and C antibodies; and liver anti-cytosol 1 antibody. These tests are normal: IgG; ANA; and γ-glutamyl transferase (GGT) level. What is his most likely diagnosis?

a. Autoimmune hepatitis
b. Viral Hepatitis B
c. Cholestatic jaundice
d. Viral Hepatitis C

Answer Key and Explanations

1. C: Immediate cardioversion. The man's cardiac rhythm is atrial fibrillation (AF) with a rapid ventricular response. AF is the most common arrhythmia, originating in the atria or pulmonary veins. Typical EKG findings are an irregularly irregular rhythm with no visible P-waves. The rhythm may be asymptomatic, but is associated with a rapid ventricular rate and signs of cardiovascular instability. The optimal therapy for acute arrhythmia (onset less than 48 hours) with severe cardiovascular symptoms is synchronized electrical cardioversion. Patients with chronic AF require several weeks of anticoagulants (usually warfarin), followed by elective cardioversion. Prescribe either beta-blockers or digoxin for rate control, or rhythm control with sotalol or amiodarone. There is no clear-cut best practice. Anticoagulation is always indicated to reduce stroke risk from thromboemboli originating in the atrial appendage.

2. D: Technetium Tc99m Sestamibi stress test. The primary objective is to determine if the patient has coronary artery disease (CAD). His history of smoking, high blood pressure, and possibly diabetes already elevates his risk. A lipid profile would only corroborate his risk for CAD. An EGD endoscopy would rule out an upper gastrointestinal cause of his symptoms, such as gastroesophageal reflux or esophageal spasm. Many patients have both coronary artery disease and gastrointestinal reflux. An elevated troponin level may indicate recent myocardial damage, but is likely to be normal or equivocal in this patient. Since he is presently stable and pain-free, an isotopic stress test is preferable to immediate angiography. Consider angiography, and possible angioplasty and stenting, after reviewing the results of his stress test.

3. B: Angiotensin receptor blocker (ARB). Hypertension is common among diabetics, and contributes to such complications as myocardial infarction, heart failure, stroke, diabetic nephropathy, and microvascular disease. The American Diabetes Association (ADA) recommends reducing the diabetic's blood pressure below 130/80 mm/Hg (rather than below 140/90 mm/Hg for the general population with isolated hypertension). Rarely is a single drug sufficient to achieve the ADA's target goal. The patient's elevated creatinine and LVH indicate end organ damage, so immediate antihypertensive therapy is required. The ADA and JNC8 guidelines recommend initiating pharmacologic therapy in patients under 60 with diabetes using either an ACE Inhibitor or ARB therapy (but never together) because of their renal protective action and low incidence of side-effects. Add additional drugs with different mechanisms of action to reach the target goal, instead of increasing the dose of a single agent. If the diabetic has ischemic heart disease, add a dihydropyridine CCB or beta-blocker. Thiazide diuretics are recommended as a first line treatment option in individuals without diabetes.

4. B: Warfarin. Warfarin is not usually indicated for coronary artery disease patients, unless their CAD is complicated by atrial fibrillation or venous thromboembolism. Clopidogrel, a platelet inhibitor, is generally prescribed to diminish the chance of stent thrombosis. However, 15% to 48% of patients are resistant, so higher doses of clopidogrel or another anti-platelet drug (e.g., prasugrel) may be employed. If the patient's bleeding risk is low, add Aspirin for dual anti-platelet therapy. A statin is definitely indicated, even if the patient's LDL cholesterol is in the normal range. Many cardiologists believe LDL cholesterol should be reduced to less than 70 mg/dL in CAD patients. Angiotensin converting enzyme (ACE) inhibitors have a protective effect on the brains, hearts, and kidneys of CAD patients, in addition to their antihypertensive action.

5. A: The left ventricular ejection fraction (LVEF) is usually above 40% or 50% in a DHF patient. Systolic heart failure (SHF) means the heart cannot pump enough blood efficiently in its

active phase. Diastolic heart failure (DHF) means the heart cannot relax enough during its resting phase. DHF shares many clinical features with SHF, including similar symptoms, impaired physical capacity, and lowered quality of life. However, the left ventricular ejection fraction (LVEF) of the DHF patient is preserved, often above 40% to 50%. DHF patients have a better survival rate. Sometimes, DHF evolves into SHF, with a reduced LVEF. Diuretics may reduce the sodium and water retention of DHF, in a manner similar to that of SHF. Calcium channel blockers (e.g., verapamil) or beta-blockers (e.g., propranolol) may benefit patients with either sinus rhythm or atrial fibrillation. Angiotensin receptor blockers may improve DHF hypertrophy and stiffening, as in SHF. There is no evidence that these drugs prolong survival or reduce morbidity, but they relieve symptoms.

6. C: Calcific aortic stenosis and aortic valve replacement. Twenty-five percent of older adults suffer hardening and narrowing of the heart valves, and 3% develop more serious calcific aortic stenosis with obstruction. Trileaflet stenosis from aging causes 50% of cases; congenital bicuspid stenosis causes 40% of cases; only 10% of cases result from rheumatic fever. Signs and symptoms start between ages 40 and 60. Angina, syncope, and sometimes left ventricular failure occur when the valve opening narrows to one-third of normal, (Normal aortic valves measure 3 to 4 cm^2). A geometric increase in the left ventricular-aortic gradient occurs. Echocardiography estimates the gradient size by Doppler measurement of the flow velocity (gradient = 4 x $velocity^2$). Cardiac catheterization is required for hemodynamic assessment, and to determine if coronary disease is present. Surgical valve replacement is indicated for all symptomatic patients able to undergo surgery. Balloon aortic valvotomy is inappropriate for non-surgical patients. Percutaneous aortic valve replacement holds future promise.

7. C: Thrombolytic therapy with recombinant tissue-type plasminogen activator (TPA). The patient has a life-threatening situation, with a presumptive clinical diagnosis of massive pulmonary embolus. Heparin can prevent further clot formation, and allows the thrombolytic system to work more efficiently, but it may not be effective in dissolving a large thrombus. A vena caval filter is indicated for those patients with recurrent thromboemboli who receive adequate anticoagulant therapy, but a filter is useless for a pulmonary embolus that has already occurred. Pressor support with dopamine or norepinephrine is indicated, since she is hypotensive. Since there was evidence of only moderate coronary obstruction and good collaterals, and an angioplasty was performed, bypass surgery is not indicated. Her situation is dire, so start thrombolytic therapy with streptokinase (SK) or TPA immediately, even without imaging confirmation of the embolus.

8. A: Acute pancreatitis established by serum amylase. The female patient's signs and symptoms are typical of acute pancreatitis, but the physician must consider other causes of acute, severe abdominal pain. The most likely cause of pancreatitis in this woman, who has no history of alcoholism, is gallstones with ductal hypertension and pancreatic enzyme activation. Serum amylase and lipase are nearly always markedly elevated, but lipase tends to remain elevated longer. Ultrasound of her abdomen may disclose gallstones, and a CT could reveal pancreatic edema. Acute cholecystitis is a possibility, but can usually be ruled out by ultrasonography. Bowel obstruction would be unlikely because she has no history of prior abdominal surgery leading to adhesions, diminished bowel sounds, and no change in her usual bowel movement pattern. Her pain pattern is unusual for appendicitis, but rule out that the anatomic position of her appendix is not causing atypical pain, by abdominal CT.

9. B: Diverticular source diagnosed by colonoscopy. Lower gastrointestinal bleeding is a common emergency, arising from many sources, including: Colon cancer; colitis; angiodysplasia; diverticula; and hemorrhoids. Bright red hematochezia is from the anus, rectum, or sigmoid. Maroon hematochezia of sudden onset is more likely from diverticula in the transverse or right

colon, with mixed arterial and venous blood. Black melena is from the stomach or duodenum. Colonoscopy is the appropriate initial diagnostic test for all lower gastrointestinal bleeding, except when transfusion and emergency surgery are needed to prevent hypovolemic shock. Do not perform barium enemas for acute bleeding. Inflammatory bowel disease (ulcerative colitis or Crohn's disease) causes lower gastrointestinal bleeding, but usually in younger patients with prodromal diarrhea or abdominal pain. Cancer of the ascending colon in older adults produces occult blood with asymptomatic iron deficiency anemia, and is diagnosed by a positive Hemoccult test during routine screening.

10. B: Temporarily increase the prednisone, add azathioprine, and then taper the steroid again. Oral and intravenous corticosteroids induce remission in Crohn's disease. However, do not continue steroids indefinitely because of their considerable side-effects. Appropriate initial therapy may include antibiotics, such as metronidazole and/or ciprofloxacin. If a flare-up of Crohn's disease occurs while tapering steroids, then temporarily increase the steroid dose, and subsequently add an immunosuppressant. After several weeks on the anti-immune drug, try steroid tapering again. Only perform surgery early in Crohn's disease if the patient is refractory to medical therapy, or develops a fistula, abscess, or intestinal obstruction. The physician may use drugs containing 5-amino-salicylic acid (e.g., sulfasalazine and olsalazine) as maintenance therapy for Crohn's patients in remission. However, they are more useful for ulcerative colitis. Powdered opium and belladonna are antidiarrheal and antispasmodic medications for symptom relief, but they do not slow or cure Crohn's disease.

11. D: Viral Hepatitis C. The patient's clinical picture suggests acute viral hepatitis because the onset was sudden, with jaundice, high aminotransferases, and modest elevations in his other liver function tests. Cholestasis is characterized predominantly by alkaline phosphatase elevation, usually with elevated GGT. Autoimmune hepatitis is characterized by elevated IgG levels, and a positive ANA or liver anti-cytosol 1 antibody. Antibodies to Hepatitis A (IgM anti-HAV) and B (IgM anti-HBc) appear early in the disease, and usually increase when symptoms and jaundice are present. However, a rise in anti-HCV antibody titer is usually delayed for two or three months after the onset of Hepatitis C symptoms. Obtain a follow-up HCV antibody level several months after the onset of illness, in cases in which A and B antibodies are negative. HCV RNA by polymerase chain reaction is usually elevated early in the illness, and may be diagnostic in cases such as this man's.

12. C: Obtain a stool H. pylori antigen test, and if positive, begin a PPI and antibiotic therapy. If a young patient with upper gastrointestinal symptoms has no alarming findings (such as weight loss, anemia, changes in bowel function, or gastrointestinal bleeding) then an immediate EGD endoscopy is usually unnecessary. This patient has no history of NSAID or Aspirin use that could cause stomach bleeding. He possibly has a peptic ulcer, so order an H. pylori test by urea breath or stool antigen. If the result is positive for H. pylori, start the patient on triple therapy (PPI or bismuth compound, and two appropriate antibiotics) or quadruple therapy (PPI, and a bismuth compound, and two appropriate antibiotics) for seven to 14 days. Observe him for four to six weeks. If his symptoms persist, refer him for an endoscopy. If a patient does take NSAIDs, then discontinue them and prescribe PPI for four to six weeks. If there is no relief, then endoscopy is indicated.

13. D: Smoking cessation. Cessation of cigarette smoking is the only measure found to ameliorate the course of COPD, predominantly in patients with an FEV1 more than 50% of predicted. However, instruct all patients with COPD to stop smoking. β2-agonists offer symptomatic relief in these patients, whether they are short-acting like albuterol, or long-acting like salmeterol. However, β2-agonists do not influence the course of the disease. Inhaled long-acting anticholinergics, alone or in combination with β2-agonists, do not alter progression of COPD. High doses of inhaled steroids may offer a small, one-time improvement in FEV1, and may also prevent exacerbations. Oral steroids,