FULL-LENGTH PRACTICE TEST 8

Practice Test 8: Cardiology

75 Questions — Recommended Time: 75 Minutes

1. A 58-year-old man presents to the emergency department with crushing substernal chest pain radiating to his left arm for the past 45 minutes. He is diaphoretic and nauseated. ECG reveals ST-segment elevation of 3 mm in leads II, III, and aVF. Troponin I is elevated. Which of the following is the most appropriate immediate intervention?

A. Thrombolytic therapy with alteplase

B. Emergent percutaneous coronary intervention (primary PCI)

C. Intravenous heparin and observation

D. Stress testing to confirm diagnosis

2. A 72-year-old woman with a history of hypertension and diabetes presents with progressive dyspnea on exertion, orthopnea, and bilateral lower extremity edema over the past three weeks. Physical examination reveals bibasilar crackles, an S3 gallop, and jugular venous distension. Echocardiography shows an ejection fraction of 30%. Which of the following is the most likely diagnosis?

A. Acute pericarditis

B. Restrictive cardiomyopathy

C. Cor pulmonale

D. Heart failure with reduced ejection fraction (HFrEF)

3. A 65-year-old man with a history of heart failure with reduced ejection fraction (EF 25%) is currently taking lisinopril, carvedilol, and furosemide. His blood pressure is 110/68 mmHg, heart rate is 62 bpm, and potassium is 4.2 mEq/L. He remains symptomatic with NYHA Class III symptoms. Which of the following medications should be added to reduce mortality?

A. Spironolactone

B. Amlodipine

C. Digoxin

D. Verapamil

4. A 45-year-old woman presents with sharp, pleuritic chest pain that improves when leaning forward and worsens when lying supine. She had a viral upper respiratory infection one week ago. Physical examination reveals a friction rub on auscultation. ECG shows diffuse ST-segment elevation with PR-segment depression. Which of the following is the most likely diagnosis?

A. Acute myocardial infarction

B. Pulmonary embolism

C. Acute pericarditis

D. Aortic dissection

5. A 78-year-old man presents with exertional syncope, angina, and progressive dyspnea on exertion. Physical examination reveals a harsh crescendo-decrescendo systolic murmur heard best at the right upper sternal border that radiates to the carotids. There is a delayed and diminished carotid upstroke (pulsus parvus et tardus). Which of the following is the most likely diagnosis?

A. Mitral regurgitation

B. Aortic stenosis

C. Hypertrophic cardiomyopathy

D. Mitral stenosis

6. A 62-year-old man with a recent ST-elevation myocardial infarction treated with PCI and stent placement is being discharged. Which of the following medication combinations is most appropriate for secondary prevention?

A. Aspirin, P2Y12 inhibitor (clopidogrel or ticagrelor), high-intensity statin, beta-blocker, and ACE inhibitor

B. Aspirin alone with a moderate-intensity statin

C. Warfarin, aspirin, and a calcium channel blocker

D. Beta-blocker and ACE inhibitor only without antiplatelet therapy

7. A 55-year-old woman presents with palpitations and an irregular pulse. ECG reveals an irregularly irregular rhythm with absent P waves, fibrillatory baseline, and a ventricular rate of 142 bpm. She has no signs of hemodynamic instability. Her CHA_2DS_2-VASc score is 3. Which of the following is the most appropriate long-term stroke prevention strategy?

A. Aspirin alone

B. Aspirin plus clopidogrel

C. No anticoagulation needed

D. Oral anticoagulation with a direct oral anticoagulant (DOAC)

8. A 52-year-old man presents with sudden onset of tearing chest pain radiating to his back. His blood pressure is 185/110 mmHg in the right arm and 140/90 mmHg in the left arm. Chest X-ray reveals a widened mediastinum. Which of the following is the most appropriate initial diagnostic study?

A. ECG and troponin levels

B. Coronary angiography

C. CT angiography of the chest

D. Transthoracic echocardiography

9. A 70-year-old woman with hypertension presents for a routine visit. Her blood pressure is 158/92 mmHg on three separate occasions. She has no diabetes, chronic kidney disease, or cardiovascular disease. According to current guidelines, which of the following is the most appropriate blood pressure target for this patient?

A. Less than 130/80 mmHg

B. Less than 120/80 mmHg

C. Less than 150/90 mmHg

D. Less than 160/100 mmHg

10. A 40-year-old man collapses at a gym during exercise. Bystander CPR is initiated. AED analysis reveals ventricular fibrillation. Which of the following is the most appropriate immediate intervention?

A. Intravenous amiodarone bolus

B. Immediate defibrillation with 200 joules (biphasic)

C. Epinephrine 1 mg IV push

D. Synchronized cardioversion at 100 joules

11. A 68-year-old man presents with progressive exertional dyspnea, fatigue, and lower extremity edema. Echocardiography reveals an ejection fraction of 60%, left ventricular hypertrophy, impaired diastolic relaxation, and an elevated E/e' ratio. Which of the following is the most likely diagnosis?

A. Dilated cardiomyopathy

B. Aortic stenosis

C. Pericardial effusion

D. Heart failure with preserved ejection fraction (HFpEF)

12. A 30-year-old woman presents for evaluation of a heart murmur. Physical examination reveals a mid-systolic click followed by a late systolic murmur heard best at the apex. The murmur becomes louder and longer with standing (Valsalva maneuver). Which of the following is the most likely diagnosis?

A. Aortic stenosis

B. Atrial septal defect

C. Mitral valve prolapse

D. Ventricular septal defect

13. A 55-year-old man with stable angina undergoes a stress test. During exercise, he develops 2 mm ST-segment depression in leads V4-V6, chest pain, and a drop in systolic blood pressure from 140 to 100 mmHg. Which of the following best describes this result?

A. High-risk positive stress test suggesting severe coronary artery disease

B. Low-risk positive stress test manageable with medical therapy alone

C. False-positive result requiring no further workup

D. Normal physiologic response to exercise

14. A 65-year-old woman with a history of rheumatic fever presents with progressive dyspnea, orthopnea, and hemoptysis. Physical examination reveals a low-pitched diastolic rumble heard best at the apex with the bell of the stethoscope, an opening snap, and a loud S1. She is in atrial fibrillation. Which of the following is the most likely diagnosis?

A. Aortic regurgitation

B. Mitral stenosis

C. Tricuspid regurgitation

D. Mitral regurgitation

15. A 48-year-old man presents with chest pain and dyspnea. ECG reveals low-voltage QRS complexes and electrical alternans. Chest X-ray shows an enlarged, "water-bottle" shaped cardiac silhouette. He is hypotensive with distended neck veins and muffled heart sounds. Which of the following is the most likely diagnosis?

A. Tension pneumothorax

B. Massive pulmonary embolism

C. Acute myocardial infarction

D. Cardiac tamponade

16. A 72-year-old man with a history of chronic atrial fibrillation presents with a heart rate of 42 bpm, dizziness, and near-syncope. ECG reveals atrial fibrillation with a slow ventricular response that does not improve with atropine. Which of the following is the most appropriate long-term management?

A. Oral diltiazem

B. Oral digoxin

C. Permanent pacemaker implantation

D. Isoproterenol infusion

17. A 60-year-old man presents with exertional chest discomfort that resolves with rest within 5 minutes. He reports this has occurred predictably with the same level of exertion for the past six months. His resting ECG is normal. Which of the following best describes this presentation?

A. Unstable angina

B. Stable angina pectoris

C. Variant (Prinzmetal) angina

D. Non-ST elevation myocardial infarction

18. A 50-year-old man with no cardiac history suddenly develops a wide-complex tachycardia at a rate of 180 bpm. He is conscious but hypotensive with a blood pressure of 78/50 mmHg and appears diaphoretic and confused. Which of the following is the most appropriate immediate treatment?

A. Synchronized cardioversion

B. Intravenous adenosine

C. Intravenous amiodarone

D. Vagal maneuvers

19. A 35-year-old man presents for a sports physical. He has a family history of sudden cardiac death in his father at age 30. Physical examination reveals a harsh systolic murmur at the left lower sternal border that increases with Valsalva maneuver and decreases with squatting. Echocardiography reveals asymmetric septal hypertrophy with systolic anterior motion of the mitral valve. Which of the following is the most likely diagnosis?

A. Dilated cardiomyopathy

B. Aortic stenosis

C. Mitral valve prolapse

D. Hypertrophic cardiomyopathy

20. A 66-year-old man presents with a three-month history of exertional dyspnea and fatigue. His blood pressure is 145/55 mmHg with a widened pulse pressure. Physical examination reveals a high-pitched, blowing, early diastolic decrescendo murmur heard best at the left sternal border with the patient sitting up and leaning forward. He also has bounding "water-hammer" pulses. Which of the following is the most likely diagnosis?

A. Aortic stenosis

B. Mitral stenosis

C. Aortic regurgitation

D. Mitral regurgitation

21. A 58-year-old man presents to the emergency department with substernal chest pressure, nausea, and diaphoresis for one hour. ECG shows ST elevation in leads V1-V4. Primary PCI reveals a 99% occlusion of the left anterior descending artery. Which coronary artery territory is involved, and which wall of the heart is most affected?

A. Left anterior descending artery — anterior wall of the left ventricle

B. Right coronary artery — inferior wall

C. Left circumflex artery — lateral wall

D. Left main coronary artery — global ischemia

22. A 70-year-old man with a history of prosthetic aortic valve replacement presents with fever, night sweats, fatigue, and a new regurgitant murmur. Blood cultures grow Staphylococcus aureus. Transesophageal echocardiography reveals a vegetation on the prosthetic valve with a perivalvular abscess. Which of the following is the most likely diagnosis?

A. Rheumatic heart disease

B. Libman-Sacks endocarditis

C. Native valve endocarditis

D. Prosthetic valve endocarditis

23. A 55-year-old woman with a history of hypertension and chronic kidney disease (eGFR 35 mL/min) requires initiation of antihypertensive therapy. Her potassium is 5.1 mEq/L. Which of the following antihypertensive classes is most appropriate as initial therapy?

A. ACE inhibitor

B. Calcium channel blocker (amlodipine)

C. Potassium-sparing diuretic (spironolactone)

D. ARB combined with an ACE inhibitor

24. A 45-year-old man presents with acute onset of palpitations and lightheadedness. ECG reveals a regular narrow-complex tachycardia at 180 bpm. Vagal maneuvers and IV adenosine abruptly terminate the arrhythmia. Which of the following is the most likely diagnosis?

A. Atrial fibrillation

B. Ventricular tachycardia

C. Atrioventricular nodal reentrant tachycardia (AVNRT)

D. Atrial flutter

25. A 68-year-old woman with a history of diabetes and hypertension presents with chest discomfort described as pressure, jaw pain, nausea, and dyspnea for the past 3 hours. ECG shows ST depression in leads V3-V6 and T-wave inversions. Troponin is elevated. Which of the following is the most likely diagnosis?

A. Non-ST elevation myocardial infarction (NSTEMI)

B. Stable angina

C. Aortic dissection

D. Costochondritis

26. A 42-year-old man is diagnosed with primary hypertension. His blood pressure is 148/94 mmHg. He has no comorbidities. Initial lifestyle modifications have been unsuccessful after three months. Which of the following is the most appropriate initial pharmacologic therapy?

A. Oral hydralazine

B. Thiazide diuretic, ACE inhibitor, ARB, or calcium channel blocker

C. Clonidine

D. Loop diuretic

27. A 75-year-old woman presents with fatigue, dyspnea, and syncope. ECG reveals a regular rhythm with a ventricular rate of 35 bpm. P waves are present but bear no relationship to the QRS complexes. The PR interval is variable, and the atrial rate is faster than the ventricular rate. Which of the following is the most likely diagnosis?

A. First-degree AV block

B. Mobitz type I (Wenckebach) AV block

C. Mobitz type II AV block

D. Third-degree (complete) AV block

28. A 52-year-old man with a 10-year history of heavy alcohol use presents with progressive dyspnea, peripheral edema, and fatigue. Echocardiography reveals four-chamber dilation with an ejection fraction of 20% and diffuse global hypokinesis. Which of the following is the most likely diagnosis?

A. Alcoholic dilated cardiomyopathy

B. Hypertrophic cardiomyopathy

C. Restrictive cardiomyopathy

D. Takotsubo cardiomyopathy

29. A 55-year-old man presents with sudden onset of severe tearing chest pain radiating to his back. He has a history of poorly controlled hypertension and Marfan syndrome. CT angiography reveals a dissection flap originating in the ascending aorta extending to the aortic arch. Which of the following is the most appropriate management?

A. Medical management with IV labetalol to reduce heart rate and blood pressure

B. Endovascular stent-graft repair

C. Emergent open surgical repair of the ascending aorta

D. Observation with serial imaging

30. A 60-year-old woman presents with progressive lower extremity edema, dyspnea, and ascites. Echocardiography reveals a thickened, stiff myocardium with biatrial enlargement, normal left ventricular cavity size, preserved ejection fraction, and an infiltrative appearance. Endomyocardial biopsy reveals apple-green birefringence under polarized light with Congo red staining. Which of the following is the most likely diagnosis?

A. Hypertrophic cardiomyopathy

B. Cardiac amyloidosis (restrictive cardiomyopathy)

C. Constrictive pericarditis

D. Dilated cardiomyopathy

31. A 48-year-old man with no cardiac history develops palpitations. ECG reveals a regular rhythm at 150 bpm with a "sawtooth" flutter wave pattern most prominent in leads II, III, and aVF. Which of the following is the most likely diagnosis?

A. Sinus tachycardia

B. Atrial fibrillation

C. Multifocal atrial tachycardia

D. Atrial flutter with 2:1 conduction

32. A 55-year-old woman with known coronary artery disease presents with worsening chest pain occurring at rest and with minimal exertion over the past two days. Previously, her angina only occurred with vigorous exercise. ECG shows no ST elevation but new T-wave inversions in the anterior leads. Troponin is normal on serial measurements. Which of the following is the most likely diagnosis?

A. Unstable angina

B. STEMI

C. Stable angina

D. Pericarditis

33. A 62-year-old man with heart failure with reduced ejection fraction (EF 28%) on optimal guideline-directed medical therapy continues to have NYHA Class III symptoms. His QRS duration on ECG is 155 milliseconds with left bundle branch block morphology. His LVEF remains below 35%. Which of the following device therapies is most appropriate?

A. Implantable loop recorder

B. Automatic external defibrillator for home use

C. Cardiac resynchronization therapy with defibrillator (CRT-D)

D. Single-chamber pacemaker

34. A 28-year-old IV drug user presents with fever, new-onset holosystolic murmur loudest at the left lower sternal border that increases with inspiration, and multiple bilateral septic pulmonary emboli on chest CT. Blood cultures grow Staphylococcus aureus. Which of the following valves is most likely affected?

A. Mitral valve

B. Tricuspid valve

C. Aortic valve

D. Pulmonic valve

35. A 65-year-old man with a history of coronary artery disease has a fasting lipid panel showing LDL of 135 mg/dL. He is currently not on statin therapy. According to current guidelines, which of the following is the most appropriate lipid-lowering strategy?

A. High-intensity statin therapy (atorvastatin 40-80 mg or rosuvastatin 20-40 mg)

B. Moderate-intensity statin therapy

C. Lifestyle modifications alone

D. Ezetimibe monotherapy

36. A 80-year-old woman with a history of hypertension is found on routine ECG to have an irregularly irregular rhythm at a rate of 78 bpm with absent P waves. She is asymptomatic. Her CHA_2DS_2-VASc score is 4. She has a history of GI bleeding two years ago. Which of the following is the most important management consideration?

A. Rate control is unnecessary since her rate is already controlled

B. Anticoagulation is not needed since she is asymptomatic

C. Rhythm control with amiodarone is the priority

D. Anticoagulation is indicated based on CHA_2DS_2-VASc score despite prior GI bleeding, with careful risk-benefit discussion

37. A 50-year-old woman is found to have a blood pressure of 172/98 mmHg on repeated measurements. She also has hypokalemia (potassium 3.0 mEq/L) despite not taking diuretics. Further workup reveals an elevated aldosterone-to-renin ratio. Which of the following is the most likely diagnosis?

A. Essential hypertension

B. Pheochromocytoma

C. Primary hyperaldosteronism (Conn syndrome)

D. Renal artery stenosis

38. A 70-year-old man presents with exertional dyspnea and fatigue. ECG reveals a regular rhythm at 68 bpm with a PR interval of 0.28 seconds. The PR interval is constant, and every P wave is followed by a QRS complex. Which of the following is the most likely diagnosis?

A. Sinus bradycardia

B. First-degree AV block

C. Mobitz type I second-degree AV block

D. Third-degree AV block

39. A 55-year-old man with a history of HFrEF (EF 30%) is currently on lisinopril, carvedilol, spironolactone, and furosemide. His heart rate is 78 bpm in sinus rhythm. He remains symptomatic despite optimal doses. Which of the following additional medications may be considered to reduce heart failure hospitalizations?

A. Ivabradine (if heart rate remains above 70 bpm on maximum-tolerated beta-blocker dose)

B. Nifedipine

C. Diltiazem

D. Digoxin as first-line mortality-reducing agent

40. A 58-year-old man presents with ST-elevation myocardial infarction involving the inferior wall (leads II, III, aVF). He is hypotensive with a blood pressure of 80/55 mmHg. Jugular venous distension is present, but lung fields are clear. Right-sided ECG leads reveal ST elevation in lead V4R. Which of the following is the most likely complication?

A. Left ventricular free wall rupture

B. Acute mitral regurgitation from papillary muscle dysfunction

C. Left-sided heart failure with pulmonary edema

D. Right ventricular infarction

41. A 45-year-old man presents with recurrent episodes of rapid palpitations that start and stop abruptly. ECG during an episode shows a narrow-complex tachycardia at 200 bpm with a short PR interval, delta waves on the upstroke of the QRS complex during sinus rhythm, and a widened QRS. Which of the following is the most likely underlying condition?

A. Atrial fibrillation

B. Brugada syndrome

C. Wolff-Parkinson-White syndrome

D. Long QT syndrome

42. A 65-year-old woman with a history of diabetes, hypertension, and hyperlipidemia presents for routine cardiovascular risk assessment. Her 10-year ASCVD risk score is calculated at 22%. She is not currently taking a statin. Which of the following is the most appropriate recommendation?

A. Lifestyle modifications alone

B. High-intensity statin therapy

C. Moderate-intensity statin therapy

D. Aspirin monotherapy for primary prevention

43. A 72-year-old man with severe aortic stenosis (valve area 0.8 cm^2) is deemed a high surgical risk for open valve replacement due to multiple comorbidities. He is symptomatic with NYHA Class III heart failure symptoms. Which of the following is the most appropriate intervention?

A. Transcatheter aortic valve replacement (TAVR)

B. Medical management with diuretics only

C. Balloon valvuloplasty as definitive treatment

D. Aortic valve repair

44. A 50-year-old man presents with acute chest pain. ECG reveals ST elevation in leads I, aVL, V5, and V6. Which of the following coronary arteries is most likely occluded?

A. Right coronary artery

B. Left anterior descending artery

C. Posterior descending artery

D. Left circumflex artery

45. A 68-year-old woman with a history of chronic heart failure presents with nausea, visual disturbances (yellow-green halos), and a new arrhythmia. She is currently taking digoxin, furosemide, and lisinopril. ECG reveals atrial tachycardia with a slow ventricular response and frequent PVCs with a "scooped" ST-segment pattern. Her potassium is 3.1 mEq/L. Which of the following is the most likely diagnosis?

A. Furosemide toxicity

B. Lisinopril side effect

C. Digoxin toxicity

D. Acute myocardial infarction

46. A 42-year-old woman presents with exertional dyspnea, fatigue, and a fixed, widely split S2 heart sound. ECG reveals an incomplete right bundle branch block pattern. Echocardiography shows right atrial and right ventricular enlargement with a left-to-right shunt across the interatrial septum. Which of the following is the most likely diagnosis?

A. Ventricular septal defect

B. Atrial septal defect

C. Patent ductus arteriosus

D. Coarctation of the aorta

47. A 60-year-old man with a mechanical aortic valve prosthesis presents for anticoagulation management. He is currently on warfarin. Which of the following is the appropriate anticoagulation target for this patient?

A. INR 2.5 to 3.5

B. INR 1.5 to 2.0

C. Direct oral anticoagulant (apixaban) is preferred over warfarin

D. Aspirin alone is sufficient

48. A 75-year-old woman presents with syncope. ECG reveals progressively lengthening PR intervals followed by a dropped QRS complex, after which the cycle repeats. The pattern is regular. Which of the following is the most likely diagnosis?

A. First-degree AV block

B. Third-degree AV block

C. Atrial fibrillation with slow ventricular response

D. Mobitz type I (Wenckebach) second-degree AV block

49. A 55-year-old man with heart failure is started on sacubitril-valsartan (ARNI). He was previously taking lisinopril. Which of the following is the most important safety consideration when switching from an ACE inhibitor to an ARNI?

A. ARNI can be started simultaneously with the ACE inhibitor

B. No washout period is needed

C. A 36-hour washout period after discontinuing the ACE inhibitor is required before starting ARNI to reduce the risk of angioedema

D. ARNI should only be used in patients with EF above 50%

50. A 63-year-old man with a history of peripheral arterial disease presents with claudication in his right calf when walking two blocks. His ankle-brachial index (ABI) is 0.65. He has no rest pain or tissue loss. Which of the following is the most appropriate initial management?

A. Emergent surgical revascularization

B. Supervised exercise therapy, antiplatelet therapy, statin therapy, and cardiovascular risk factor modification

C. Amputation referral

D. Observation without treatment

51. A 40-year-old woman presents with substernal chest pain that occurs exclusively at rest in the early morning hours and resolves spontaneously. During an episode, ECG reveals transient ST elevation in the anterior leads that resolves when the pain subsides. Cardiac catheterization shows no significant coronary artery stenosis. Which of the following is the most likely diagnosis?

A. Variant (Prinzmetal) angina from coronary vasospasm

B. Acute myocardial infarction

C. Stable angina pectoris

D. Costochondritis

52. A 55-year-old man with a history of recent inferior STEMI treated with PCI presents 10 days later with fever, pleuritic chest pain, and a pericardial friction rub. ECG shows diffuse ST elevation. ESR and CRP are markedly elevated. Which of the following is the most likely diagnosis?

A. Reinfarction from stent thrombosis

B. Pulmonary embolism

C. Cardiac tamponade

D. Dressler syndrome (post-myocardial infarction pericarditis)

53. A 65-year-old woman with atrial fibrillation is on rate control with metoprolol. Her resting heart rate is 110 bpm despite maximizing the metoprolol dose. Which of the following is the most appropriate next step?

A. Switch to flecainide for rhythm control

B. Add diltiazem or digoxin for additional rate control

C. Immediate electrical cardioversion

D. No further intervention needed

54. A 72-year-old man presents with progressive bilateral lower extremity edema. He has a history of radiation therapy to the chest 20 years ago for lymphoma. Physical examination reveals elevated JVP with a prominent y descent, Kussmaul sign (JVP rises with inspiration), and a pericardial knock. Which of the following is the most likely diagnosis?

A. Dilated cardiomyopathy

B. Cardiac tamponade

C. Constrictive pericarditis

D. Restrictive cardiomyopathy

55. A 58-year-old man presents with episodic chest pain and ECG changes consistent with ischemia. Coronary angiography reveals 80% stenosis of the left anterior descending artery, 75% stenosis of the left circumflex artery, and 70% stenosis of the right coronary artery. Ejection fraction is 45%. Which of the following is the most appropriate revascularization strategy?

A. Coronary artery bypass grafting (CABG)

B. PCI to the LAD only

C. Medical therapy alone without revascularization

D. PCI to all three vessels

56. A 25-year-old woman presents with a continuous "machinery" murmur heard best at the left upper sternal border. She has bounding peripheral pulses and a wide pulse pressure. Echocardiography reveals a left-to-right shunt between the aorta and pulmonary artery. Which of the following is the most likely diagnosis?

A. Ventricular septal defect

B. Patent ductus arteriosus

C. Atrial septal defect

D. Coarctation of the aorta

57. A 45-year-old man with no cardiac history presents to the emergency department with new-onset atrial fibrillation with a ventricular rate of 130 bpm. He is hemodynamically stable with no signs of heart failure. His symptom onset was approximately 6 hours ago. Which of the following is the most appropriate initial management strategy?

A. Immediate electrical cardioversion without anticoagulation

B. Emergent catheter ablation

C. Rate control with IV diltiazem or metoprolol and initiation of anticoagulation based on CHA_2DS_2-VASc score

D. IV amiodarone bolus

58. A 62-year-old woman presents with lower extremity edema, dyspnea, and a holosystolic murmur heard best at the apex that radiates to the axilla. The murmur does not change with respiration. Echocardiography reveals a flail posterior mitral valve leaflet with severe regurgitation. Which of the following is the most likely diagnosis?

A. Aortic regurgitation

B. Tricuspid regurgitation

C. Mitral stenosis

D. Mitral regurgitation

59. A 50-year-old man with chronic stable angina is currently taking aspirin, atorvastatin, and metoprolol. He continues to have two to three episodes of angina per week. Which of the following medications should be added for additional anginal symptom relief?

A. Warfarin

B. Long-acting nitrate (isosorbide mononitrate) or amlodipine

C. Digoxin

D. Lisinopril for angina relief

60. A 35-year-old woman with a history of systemic lupus erythematosus presents with pleuritic chest pain, dyspnea, and low-grade fever. Echocardiography reveals small, verrucous vegetations on the mitral valve leaflets. Blood cultures are negative. Which of the following is the most likely diagnosis?

A. Libman-Sacks endocarditis

B. Infective endocarditis

C. Rheumatic heart disease

D. Marantic (nonbacterial thrombotic) endocarditis

61. A 70-year-old man with a history of heart failure presents with new-onset palpitations. ECG reveals an irregularly irregular rhythm at varying rates with at least three different P wave morphologies and varying PR intervals. He has a history of COPD. Which of the following is the most likely diagnosis?

A. Atrial fibrillation

B. Atrial flutter with variable block

C. Multifocal atrial tachycardia

D. Wandering atrial pacemaker

62. A 60-year-old man with a history of inferior STEMI four days ago suddenly develops a new loud holosystolic murmur with a palpable thrill at the left sternal border. He becomes acutely hypotensive with signs of cardiogenic shock. Which of the following is the most likely mechanical complication?

A. Papillary muscle rupture with acute mitral regurgitation

B. Cardiac tamponade from free wall rupture

C. Left ventricular aneurysm

D. Ventricular septal rupture

63. A 55-year-old man presents with sudden onset of a cold, pale, pulseless left lower extremity. He has a history of atrial fibrillation and is not on anticoagulation. On examination, the left leg is cool with absent popliteal and pedal pulses. He reports severe pain. Which of the following is the most likely diagnosis?

A. Deep vein thrombosis

B. Acute arterial embolism from atrial fibrillation

C. Chronic peripheral arterial disease

D. Aortic dissection with limb malperfusion

64. A 45-year-old man presents for evaluation of recurrent syncope. He has no structural heart disease. A tilt-table test reproduces his symptoms with hypotension and bradycardia. Which of the following is the most likely diagnosis?

A. Vasovagal (neurocardiogenic) syncope

B. Aortic stenosis

C. Ventricular tachycardia

D. Orthostatic hypotension

65. A 68-year-old man with a prior MI presents with palpitations. ECG reveals a wide-complex tachycardia at 165 bpm with AV dissociation. He is hemodynamically stable with a blood pressure of 118/72 mmHg. Which of the following is the most appropriate pharmacologic treatment?

A. IV adenosine

B. IV verapamil

C. IV amiodarone

D. IV diltiazem

66. A 50-year-old man presents with crushing substernal chest pain radiating to his jaw. ECG reveals ST elevation in leads V1-V4 with reciprocal ST depression in leads II, III, and aVF. The patient is allergic to aspirin (anaphylaxis). Which of the following is the most important antiplatelet medication to administer?

A. Warfarin

B. Dipyridamole

C. Aspirin regardless of allergy

D. P2Y12 inhibitor (clopidogrel or ticagrelor) as an alternative

67. A 58-year-old woman with newly diagnosed heart failure with reduced ejection fraction (EF 32%) is started on guideline-directed medical therapy. Her physician prescribes carvedilol. She asks why she is being given a "heart-slowing" medication for heart failure. Which of the following best explains the rationale for beta-blocker use in HFrEF?

A. Beta-blockers increase cardiac contractility acutely

B. Beta-blockers reduce harmful neurohormonal activation, reverse ventricular remodeling, and reduce mortality

C. Beta-blockers are used only for rate control in atrial fibrillation

D. Beta-blockers increase ejection fraction within the first 24 hours

68. A 70-year-old man presents with unilateral lower extremity swelling, warmth, and tenderness in the left calf. He underwent hip replacement surgery two weeks ago. Compression ultrasonography reveals a non-compressible left popliteal vein with absent flow. Which of the following is the most appropriate initial treatment?

A. Anticoagulation with a direct oral anticoagulant (rivaroxaban or apixaban) or low-molecular-weight heparin bridged to warfarin

B. Aspirin alone

C. Inferior vena cava filter placement as first-line therapy

D. Thrombolytic therapy

69. A 62-year-old woman with a history of peripheral arterial disease presents with rest pain in her right foot that worsens at night and improves when she dangles her leg over the side of the bed. On examination, the foot is cool and pale with diminished pulses. ABI is 0.35. She has a small non-healing ulcer on her first toe. Which of the following best describes the severity of her peripheral arterial disease?

A. Fontaine stage I (asymptomatic)

B. Fontaine stage IIa (mild claudication)

C. Fontaine stage IV (critical limb ischemia with tissue loss)

D. Fontaine stage IIb (moderate to severe claudication)

70. A 55-year-old man presents with sudden syncope. ECG reveals a sinus rhythm at 72 bpm with a QTc interval of 560 milliseconds. He has a family history of sudden cardiac death. Which of the following is the most appropriate long-term management to prevent sudden cardiac death?

A. Observation only

B. Oral magnesium supplementation

C. Verapamil

D. Beta-blocker therapy and consideration of implantable cardioverter-defibrillator (ICD)

71. A 45-year-old woman with no cardiac history develops acute onset of chest pain and dyspnea after receiving news of her mother's death. ECG shows ST elevation in the anterior leads. Troponin is mildly elevated. Coronary angiography reveals no obstructive coronary artery disease, but ventriculography shows apical ballooning with preserved basal function. Which of the following is the most likely diagnosis?

A. Acute anterior STEMI

B. Takotsubo (stress) cardiomyopathy

C. Myocarditis

D. Acute pericarditis

72. A 50-year-old man with hypertension and diabetes undergoes coronary angiography showing 90% stenosis of the proximal LAD. PCI with drug-eluting stent is performed. He is started on dual antiplatelet therapy. Which of the following is the minimum recommended duration of dual antiplatelet therapy after drug-eluting stent placement?

A. At least 6 to 12 months

B. 2 weeks

C. Lifelong dual antiplatelet therapy

D. 48 hours

73. A 68-year-old man with chronic atrial fibrillation on warfarin presents with an INR of 8.5. He has no signs of active bleeding. Which of the following is the most appropriate management?

A. Continue warfarin at the current dose

B. Administer IV vitamin K and fresh frozen plasma immediately

C. Administer IV prothrombin complex concentrate

D. Hold warfarin, administer oral vitamin K, and recheck INR in 24 hours

74. A 60-year-old man with a history of anterior STEMI two months ago presents with progressive dyspnea and signs of heart failure. Echocardiography reveals a large, thin-walled apical aneurysm with mural thrombus. EF is 25%. Which of the following is the most serious risk associated with the mural thrombus?

A. Pulmonary hypertension

B. Aortic dissection

C. Systemic thromboembolism (stroke)

D. Pericarditis

75. A 55-year-old man presents with severe hypertension (blood pressure 210/130 mmHg), headache, blurred vision, and acute kidney injury with serum creatinine of 3.2 mg/dL (baseline 1.0 mg/dL). Fundoscopic examination reveals papilledema and flame hemorrhages. Urinalysis shows proteinuria and red blood cell casts. Which of the following best describes this presentation?

A. Hypertensive urgency

B. Hypertensive emergency (malignant hypertension)

C. Essential hypertension

D. White coat hypertension

PRACTICE TEST 8: ANSWER KEY WITH EXPLANATIONS

Cardiology

1. B. Emergent percutaneous coronary intervention (primary PCI). ST-elevation myocardial infarction requires emergent reperfusion therapy, with primary PCI being the preferred strategy when available within 90 minutes of first medical contact (120 minutes for transfer). ST elevation in leads II, III, and aVF indicates an inferior wall STEMI, most commonly from right coronary artery occlusion. Primary PCI achieves higher rates of TIMI 3 flow (complete reperfusion), lower reinfarction rates, and reduced mortality compared to thrombolytic therapy. Fibrinolytic therapy is reserved for facilities without PCI capability when transfer time would exceed 120 minutes.

2. D. Heart failure with reduced ejection fraction (HFrEF). HFrEF is defined as clinical heart failure with an ejection fraction of 40% or less (this patient's EF is 30%). The constellation of progressive dyspnea, orthopnea, bilateral lower extremity edema, bibasilar crackles (pulmonary congestion), S3 gallop (reflecting rapid ventricular filling into a volume-overloaded ventricle), and jugular venous distension represents both left- and right-sided heart failure. Hypertension and diabetes are the two most common contributing etiologies alongside coronary artery disease. Guideline-directed medical therapy includes ACE inhibitor/ARB/ARNI, beta-blocker, aldosterone antagonist, and SGLT2 inhibitor.

3. A. Spironolactone. Aldosterone antagonists (spironolactone or eplerenone) reduce mortality in HFrEF patients with NYHA Class II-IV symptoms who have an EF of 35% or less and are already on an ACE inhibitor and beta-blocker, provided potassium is below 5.0 mEq/L and renal function is adequate. The RALES trial demonstrated a 30% relative mortality reduction with spironolactone. Potassium and renal function must be monitored closely after initiation due to hyperkalemia risk. Verapamil and diltiazem are contraindicated in HFrEF because their negative inotropic effects can worsen heart failure.

4. C. Acute pericarditis. Acute pericarditis presents with sharp, pleuritic chest pain that characteristically improves with sitting up and leaning forward (reducing pericardial friction) and worsens when supine. A pericardial friction rub — a scratchy, high-pitched sound with up to three components — is pathognomonic. ECG shows diffuse ST elevation (concave upward) with PR depression, distinguishing it from STEMI which produces ST elevation in a coronary territory distribution. Viral infection is the most common cause. Treatment for idiopathic/viral pericarditis is NSAIDs (ibuprofen) plus colchicine, with colchicine reducing recurrence risk by approximately 50%.

5. B. Aortic stenosis. Aortic stenosis produces the classic triad of exertional angina, syncope, and heart failure (dyspnea) — with syncope carrying the most ominous prognosis in the natural history. The harsh

crescendo-decrescendo systolic ejection murmur at the right upper sternal border radiating to the carotids is characteristic. Pulsus parvus et tardus (delayed and diminished carotid upstroke) reflects obstruction of left ventricular outflow. Calcific degeneration of a tricuspid aortic valve is the most common cause in elderly patients. Valve replacement is indicated for symptomatic severe aortic stenosis.

6. A. Aspirin, P2Y12 inhibitor, high-intensity statin, beta-blocker, and ACE inhibitor. Post-STEMI secondary prevention requires a comprehensive medication regimen. Dual antiplatelet therapy (aspirin plus clopidogrel or ticagrelor) is maintained for at least 12 months after stent placement to prevent stent thrombosis. High-intensity statin therapy reduces LDL and stabilizes atherosclerotic plaques. Beta-blockers reduce myocardial oxygen demand, prevent arrhythmias, and reduce mortality. ACE inhibitors prevent adverse ventricular remodeling, particularly in patients with reduced EF or anterior wall infarction. This combination has the strongest evidence for reducing recurrent cardiovascular events and mortality.

7. D. Oral anticoagulation with a direct oral anticoagulant (DOAC). Atrial fibrillation is identified by irregularly irregular rhythm with absent P waves and fibrillatory baseline. A CHA_2DS_2-VASc score of 3 indicates significant stroke risk requiring long-term oral anticoagulation. DOACs (apixaban, rivaroxaban, edoxaban, dabigatran) are preferred over warfarin for nonvalvular atrial fibrillation due to similar or superior efficacy, lower intracranial hemorrhage risk, fewer drug interactions, and no routine monitoring requirement. Aspirin alone or aspirin plus clopidogrel is inferior to oral anticoagulation for stroke prevention in atrial fibrillation.

8. C. CT angiography of the chest. Acute aortic dissection presents with sudden severe "tearing" or "ripping" chest pain radiating to the back. Blood pressure differential between arms (greater than 20 mmHg systolic) and a widened mediastinum on chest X-ray are highly suggestive findings. CT angiography is the diagnostic study of choice with sensitivity and specificity approaching 98-100%, providing rapid identification of the dissection flap, extent of dissection, and involvement of branch vessels. Transesophageal echocardiography is an alternative when CT is unavailable or the patient is too unstable for transport.

9. A. Less than 130/80 mmHg. Current ACC/AHA guidelines (2017) recommend a blood pressure target of less than 130/80 mmHg for all adults with hypertension, including those aged 65 and older. This recommendation is supported by the SPRINT trial, which demonstrated significant cardiovascular mortality reduction with intensive blood pressure control (target less than 120 mmHg systolic) compared to standard treatment (target less than 140 mmHg) in high-risk patients. The lower threshold applies regardless of age, though clinical judgment should guide treatment in frail elderly patients at risk for falls or adverse effects from overtreatment.

10. B. Immediate defibrillation with 200 joules (biphasic). Ventricular fibrillation is a shockable rhythm, and immediate defibrillation is the single most important intervention for survival. Every minute of delay in defibrillation reduces survival by approximately 7-10%. Defibrillation delivers an unsynchronized shock to simultaneously depolarize all myocardial cells, allowing the sinoatrial node to resume organized electrical activity. CPR should continue until the defibrillator is charged. Epinephrine

and amiodarone are administered after initial defibrillation attempts if VF persists. Synchronized cardioversion is used for organized rhythms with a pulse (unstable SVT, atrial fibrillation, ventricular tachycardia with a pulse).

11. D. Heart failure with preserved ejection fraction (HFpEF). HFpEF (previously called diastolic heart failure) is characterized by signs and symptoms of heart failure with a preserved ejection fraction (typically 50% or above). Echocardiographic findings include left ventricular hypertrophy, impaired diastolic relaxation (abnormal relaxation pattern), and elevated E/e' ratio (reflecting elevated left ventricular filling pressures). HFpEF accounts for approximately 50% of all heart failure cases and is more common in elderly women with hypertension, diabetes, and obesity. Treatment focuses on diuretics for congestion, blood pressure control, and SGLT2 inhibitors (empagliflozin and dapagliflozin have demonstrated benefit).

12. C. Mitral valve prolapse. MVP is the most common valvular abnormality, affecting 2-3% of the general population. The hallmark auscultatory finding is a mid-systolic click (from sudden tensing of the chordae tendinae as the mitral leaflets prolapse into the left atrium) followed by a late systolic murmur of mitral regurgitation. The murmur becomes louder and longer with maneuvers that decrease left ventricular volume (standing, Valsalva) because the reduced ventricular size allows earlier prolapse. Squatting increases venous return and ventricular volume, delaying prolapse and shortening the murmur.

13. A. High-risk positive stress test suggesting severe coronary artery disease. A positive stress test with multiple high-risk features indicates severe coronary disease requiring further evaluation with coronary angiography. High-risk indicators include ST depression greater than 2 mm, early onset of ischemia (low workload), prolonged ST changes during recovery, hypotensive response to exercise (drop in systolic BP), and ischemia in multiple lead distributions. A drop in blood pressure during exercise reflects global left ventricular ischemia with inability to augment cardiac output, often indicating left main or severe multivessel disease. This patient requires coronary angiography for definitive evaluation.

14. B. Mitral stenosis. Mitral stenosis is almost always secondary to rheumatic heart disease, with a latency period of 10-20 years between acute rheumatic fever and symptomatic valve disease. The low-pitched diastolic rumble at the apex (heard best with the bell in the left lateral decubitus position), opening snap, and loud S1 are classic auscultatory findings. Atrial fibrillation develops in approximately 30-40% of patients due to left atrial dilation from chronic pressure overload. Hemoptysis results from elevated pulmonary venous pressure. The opening snap-to-S2 interval shortens as stenosis severity increases.

15. D. Cardiac tamponade. Beck's triad — hypotension, distended neck veins (elevated JVP), and muffled heart sounds — is the classic presentation of cardiac tamponade. Electrical alternans (alternating QRS amplitude) on ECG results from the heart swinging within the pericardial effusion, and low-voltage QRS complexes reflect the insulating effect of the pericardial fluid. A "water-bottle" cardiac silhouette on chest X-ray indicates a large pericardial effusion. Pulsus paradoxus (greater than 10 mmHg drop in systolic BP during inspiration) is a key hemodynamic finding. Emergent pericardiocentesis is the definitive treatment.

16. C. Permanent pacemaker implantation. Symptomatic bradycardia (dizziness, near-syncope, syncope) from atrial fibrillation with a slow ventricular response that fails to respond to atropine indicates intrinsic conduction system disease requiring permanent pacemaker implantation. Rate-enhancing medications (isoproterenol) are temporizing measures only. Importantly, rate-slowing medications (diltiazem, digoxin, beta-blockers) are contraindicated in this setting as they would further reduce the ventricular rate. Class I indications for permanent pacing include symptomatic bradycardia from any cause that is not due to a reversible etiology.

17. B. Stable angina pectoris. Stable angina is characterized by chest discomfort that is reproducibly provoked by a consistent level of physical exertion, lasts less than 10 minutes, and resolves with rest or nitroglycerin. The predictable, unchanging pattern over six months distinguishes it from unstable angina (new onset, changing pattern, or rest pain). Stable angina results from a fixed atherosclerotic stenosis that limits coronary blood flow during increased myocardial oxygen demand. Management includes antianginal medications (beta-blockers, nitrates, calcium channel blockers), risk factor modification, and assessment for revascularization in refractory cases.

18. A. Synchronized cardioversion. A wide-complex tachycardia in a hemodynamically unstable patient (hypotension, altered mental status) requires immediate synchronized cardioversion regardless of whether the rhythm is ventricular tachycardia or SVT with aberrancy. Hemodynamic instability takes priority over rhythm diagnosis. Adenosine is appropriate for stable narrow-complex tachycardia. IV amiodarone is used for stable wide-complex tachycardia. Synchronized cardioversion delivers the shock timed to the R wave to avoid delivering energy during the vulnerable period (T wave), which could precipitate ventricular fibrillation.

19. D. Hypertrophic cardiomyopathy. HCM is the most common cause of sudden cardiac death in young athletes, with an autosomal dominant inheritance pattern affecting sarcomeric proteins (most commonly beta-myosin heavy chain). Asymmetric septal hypertrophy with systolic anterior motion (SAM) of the mitral valve creates dynamic left ventricular outflow tract obstruction. The murmur increases with maneuvers that decrease ventricular volume (Valsalva, standing) and decreases with maneuvers that increase volume (squatting, leg elevation). Family history of sudden cardiac death warrants risk stratification for ICD implantation.

20. C. Aortic regurgitation. Chronic aortic regurgitation produces a high-pitched, blowing, early diastolic decrescendo murmur heard best at the left sternal border with the patient sitting upright and leaning forward in end-expiration. The widened pulse pressure (145/55 = 90 mmHg) results from increased stroke volume (systolic hypertension) combined with diastolic runoff back into the left ventricle (low diastolic pressure). Classic peripheral signs include bounding "water-hammer" (Corrigan) pulses, de Musset sign (head bobbing), Quincke sign (nail bed pulsations), and Hill sign (popliteal systolic pressure exceeding brachial by more than 60 mmHg).

21. A. Left anterior descending artery — anterior wall of the left ventricle. ST elevation in leads V1-V4 corresponds to the anterior wall of the left ventricle, supplied by the left anterior descending (LAD) artery. The LAD is called the "widow maker" because anterior wall MIs are associated with the largest

area of myocardium at risk, highest risk of heart failure, ventricular arrhythmias, and mortality. Inferior wall MIs (leads II, III, aVF) involve the right coronary artery. Lateral wall MIs (leads I, aVL, V5, V6) involve the left circumflex artery. Recognizing the coronary artery-ECG territory relationship is essential for rapid triage and PCI planning.

22. D. Prosthetic valve endocarditis. Prosthetic valve endocarditis (PVE) is a devastating complication occurring in 1-6% of prosthetic valves, with Staphylococcus aureus being the most common causative organism in early PVE (within 60 days of surgery) and a frequent cause of late PVE. The presence of a perivalvular abscess on TEE is a hallmark of PVE and is an indication for urgent surgical intervention. Modified Duke criteria are used for diagnosis. S. aureus PVE carries a mortality rate of 40-50% and almost always requires surgical intervention (valve replacement with debridement) in addition to prolonged IV antibiotics.

23. B. Calcium channel blocker (amlodipine). In a patient with CKD and hyperkalemia (potassium 5.1 mEq/L), medications that raise potassium further should be avoided — this includes ACE inhibitors, ARBs, and potassium-sparing diuretics, all of which can exacerbate hyperkalemia. Dual ACE inhibitor/ARB therapy is never recommended due to increased adverse events without benefit. Calcium channel blockers (amlodipine, nifedipine) are effective antihypertensives that do not affect potassium levels and are appropriate in CKD. Once potassium is corrected, RAAS inhibitors may be carefully introduced with close monitoring given their renoprotective benefits.

24. C. Atrioventricular nodal reentrant tachycardia (AVNRT). AVNRT is the most common form of paroxysmal supraventricular tachycardia, caused by a reentrant circuit within or near the AV node utilizing dual AV nodal pathways (fast and slow). It presents with sudden onset and termination of regular narrow-complex tachycardia. Abrupt termination with vagal maneuvers or adenosine (which transiently blocks AV nodal conduction, interrupting the reentrant circuit) is highly characteristic. P waves are often buried within or immediately after the QRS complex. Catheter ablation of the slow pathway is curative for recurrent symptomatic AVNRT.

25. A. Non-ST elevation myocardial infarction (NSTEMI). NSTEMI is an acute coronary syndrome characterized by ischemic symptoms (chest pressure, jaw pain, dyspnea) with ECG changes (ST depression, T-wave inversions) and elevated cardiac biomarkers (troponin) without ST elevation. The elevated troponin distinguishes NSTEMI from unstable angina, in which troponin remains normal. Women and diabetic patients frequently present with atypical symptoms including jaw pain, nausea, and dyspnea rather than classic substernal chest pain. Management includes antiplatelet therapy, anticoagulation, and early invasive strategy (angiography within 24-72 hours) for intermediate-to-high risk patients.

26. B. Thiazide diuretic, ACE inhibitor, ARB, or calcium channel blocker. For initial pharmacologic treatment of primary hypertension, four first-line drug classes have demonstrated reduction in cardiovascular events — thiazide diuretics (chlorthalidone, hydrochlorothiazide), ACE inhibitors, ARBs, and dihydropyridine calcium channel blockers. Selection among these classes is guided by compelling indications (diabetes favors ACE/ARB, African American patients without CKD may respond better to

thiazides or CCBs) and contraindications. Hydralazine is a second-line vasodilator, and clonidine is a centrally acting agent reserved for refractory hypertension.

27. D. Third-degree (complete) AV block. Third-degree AV block is characterized by complete dissociation between atrial and ventricular activity — P waves occur at a regular rate, QRS complexes occur at a slower regular rate, and there is no relationship between them (variable PR intervals). The atrial rate is faster than the ventricular rate because none of the atrial impulses are conducted to the ventricles. An escape rhythm (junctional or ventricular) maintains cardiac output. Symptoms include fatigue, dyspnea, and syncope (Stokes-Adams attacks). Permanent pacemaker implantation is required for symptomatic complete heart block.

28. A. Alcoholic dilated cardiomyopathy. Chronic heavy alcohol consumption (typically more than 7-8 drinks daily for more than 5 years) is the most common identifiable cause of non-ischemic dilated cardiomyopathy. Alcohol has a direct toxic effect on myocardial cells, producing myocyte death, interstitial fibrosis, and progressive biventricular dilation with global systolic dysfunction. Echocardiography reveals four-chamber dilation, diffuse hypokinesis, and severely reduced ejection fraction. Abstinence from alcohol is the most important therapeutic intervention and can result in significant improvement or normalization of ejection fraction in many patients.

29. C. Emergent open surgical repair of the ascending aorta. Stanford Type A aortic dissection (involving the ascending aorta, regardless of distal extension) is a surgical emergency requiring immediate open repair due to the high risk of fatal complications including aortic rupture, cardiac tamponade, acute aortic regurgitation, coronary ostial occlusion (causing MI), and stroke. Without surgery, mortality exceeds 1-2% per hour in the first 48 hours. Stanford Type B dissections (involving only the descending aorta beyond the left subclavian artery) are typically managed medically with IV blood pressure and heart rate control unless complicated by malperfusion, rupture, or rapid expansion.

30. B. Cardiac amyloidosis (restrictive cardiomyopathy). Restrictive cardiomyopathy is characterized by impaired ventricular filling from stiff, non-compliant myocardium with preserved systolic function. Cardiac amyloidosis is the most common cause in developed countries, resulting from extracellular deposition of misfolded protein fibrils. Apple-green birefringence under polarized light microscopy with Congo red staining is the pathognomonic histologic finding. Biatrial enlargement develops from chronically elevated filling pressures. Clinical features include heart failure with preserved EF, conduction abnormalities, and low-voltage QRS complexes on ECG despite thickened walls on echocardiography.

31. D. Atrial flutter with 2:1 conduction. Atrial flutter is characterized by a "sawtooth" pattern of flutter waves (F waves) most visible in leads II, III, and aVF, reflecting organized atrial electrical activity at approximately 300 bpm. With 2:1 AV conduction (the most common), every other flutter wave is conducted, producing a regular ventricular rate of approximately 150 bpm. A regular tachycardia at exactly 150 bpm should always prompt consideration of atrial flutter with 2:1 block. Carotid sinus massage or adenosine may transiently increase AV block, unmasking the flutter waves for diagnosis.

32. A. Unstable angina. Unstable angina is classified as an acute coronary syndrome defined by new-onset angina, angina at rest, or a significant change in the pattern of previously stable angina (crescendo angina). This patient's previously exertion-limited angina has progressed to occurring at rest and with minimal exertion, representing a destabilization of her coronary disease — likely from plaque rupture or erosion with superimposed thrombus formation that is not completely occlusive. The normal serial troponins distinguish unstable angina from NSTEMI. Despite normal biomarkers, unstable angina requires urgent evaluation and management identical to NSTEMI.

33. C. Cardiac resynchronization therapy with defibrillator (CRT-D). CRT-D is indicated for HFrEF patients with LVEF ≤35%, NYHA Class II-IV symptoms despite optimal medical therapy, sinus rhythm, and QRS duration ≥150 ms with left bundle branch block morphology. CRT uses biventricular pacing to coordinate left ventricular contraction, improving cardiac output, reducing mitral regurgitation, and promoting reverse remodeling. The MADIT-CRT and COMPANION trials demonstrated significant reductions in heart failure hospitalizations and mortality. The defibrillator component provides protection against sudden cardiac death from ventricular arrhythmias.

34. B. Tricuspid valve. Right-sided (tricuspid valve) endocarditis accounts for approximately 5-10% of all infective endocarditis cases and is strongly associated with IV drug use. Staphylococcus aureus is the causative organism in approximately 60-90% of IV drug use-associated endocarditis. The tricuspid valve is preferentially affected because injected particulate matter and bacteria in venous blood first encounter the right heart valves. Tricuspid valve vegetations embolize to the pulmonary vasculature, producing septic pulmonary emboli that appear as multiple bilateral nodular infiltrates that frequently cavitate. The holosystolic murmur increasing with inspiration (Carvallo sign) is characteristic of tricuspid regurgitation.

35. A. High-intensity statin therapy. For patients with established atherosclerotic cardiovascular disease (secondary prevention), high-intensity statin therapy is indicated regardless of baseline LDL level. High-intensity statins (atorvastatin 40-80 mg or rosuvastatin 20-40 mg) reduce LDL by approximately 50% or more. Current guidelines recommend treating to a target LDL below 70 mg/dL, with some recommending below 55 mg/dL for very high-risk patients. If LDL remains above goal on maximally tolerated statin therapy, adding ezetimibe and/or a PCSK9 inhibitor (evolocumab, alirocumab) is recommended.

36. D. Anticoagulation is indicated based on CHA_2DS_2-VASc score despite prior GI bleeding. A CHA_2DS_2-VASc score of 4 indicates high stroke risk (approximately 4-5% per year) requiring anticoagulation regardless of whether the atrial fibrillation is symptomatic. The decision to anticoagulate is based on stroke risk, not symptom status. Prior GI bleeding does not absolutely contraindicate anticoagulation but requires careful risk-benefit discussion, evaluation and treatment of the bleeding source, and potentially selection of an anticoagulant with lower GI bleeding risk (apixaban has the lowest GI bleeding rate among DOACs).

37. C. Primary hyperaldosteronism (Conn syndrome). Resistant or refractory hypertension combined with unprovoked hypokalemia (not on diuretics) should prompt evaluation for primary hyperaldosteronism, the most common cause of secondary hypertension. Autonomous aldosterone production causes sodium retention (hypertension) and potassium excretion (hypokalemia). An elevated

aldosterone-to-renin ratio (ARR) greater than 30 with a plasma aldosterone above 15 ng/dL is the screening test. Confirmatory testing includes saline infusion test or oral salt loading. CT imaging identifies unilateral adenoma versus bilateral hyperplasia, guiding surgical versus medical management.

38. B. First-degree AV block. First-degree AV block is defined as a prolonged PR interval (greater than 0.20 seconds, or 200 ms) with every P wave followed by a QRS complex — the conduction is delayed but not blocked. This patient's PR interval of 0.28 seconds is prolonged, but 1:1 AV conduction is maintained. First-degree AV block is generally benign and asymptomatic, requiring no treatment in most cases. It may result from increased vagal tone, medications (beta-blockers, calcium channel blockers, digoxin), or intrinsic conduction system disease. It is distinguished from Wenckebach by its constant (not progressively lengthening) PR interval.

39. A. Ivabradine. Ivabradine selectively inhibits the If (funny) channel in the sinoatrial node, reducing heart rate without affecting blood pressure, myocardial contractility, or AV conduction. It is indicated for patients with HFrEF (EF ≤35%) in sinus rhythm with a resting heart rate of 70 bpm or above despite maximum-tolerated beta-blocker dose, to reduce heart failure hospitalizations. Non-dihydropyridine calcium channel blockers (diltiazem, verapamil) are contraindicated in HFrEF due to negative inotropic effects. Digoxin reduces heart failure hospitalizations but does not reduce mortality.

40. D. Right ventricular infarction. RV infarction occurs in approximately 30-50% of inferior STEMIs because the right coronary artery supplies both the inferior wall and the right ventricle. The classic presentation includes hypotension, elevated JVP (right heart failure), and clear lung fields (no pulmonary edema because the failing right ventricle cannot fill the left ventricle). ST elevation in right-sided lead V4R is the most sensitive and specific ECG finding. Management requires aggressive IV fluid resuscitation (to increase RV preload) and avoidance of preload-reducing medications (nitroglycerin, morphine, diuretics) which can cause profound hypotension.

41. C. Wolff-Parkinson-White syndrome. WPW is a pre-excitation syndrome caused by an accessory pathway (Bundle of Kent) that bypasses the AV node, allowing direct electrical conduction between the atria and ventricles. During sinus rhythm, the ECG shows a short PR interval (less than 0.12 seconds), delta wave (slurred upstroke of the QRS), and widened QRS from ventricular pre-excitation. The accessory pathway creates a substrate for reentrant tachycardias. WPW with atrial fibrillation is dangerous because rapid conduction over the accessory pathway can degenerate into ventricular fibrillation. AV nodal blocking agents (adenosine, verapamil, digoxin) are contraindicated in WPW with atrial fibrillation.

42. B. High-intensity statin therapy. A 10-year ASCVD risk score of 22% places this patient in the high-risk category (20% or above), for which high-intensity statin therapy is recommended as primary prevention. The four major statin benefit groups include clinical ASCVD (secondary prevention), LDL ≥190 mg/dL, diabetes aged 40-75, and 10-year ASCVD risk ≥7.5% (with higher-intensity treatment for risk ≥20%). Additionally, aspirin for primary prevention is no longer broadly recommended and requires individualized risk-benefit assessment, particularly considering bleeding risk.

43. A. Transcatheter aortic valve replacement (TAVR). TAVR has revolutionized the treatment of severe symptomatic aortic stenosis in patients who are at high or prohibitive surgical risk for open surgical aortic valve replacement (SAVR). TAVR involves deploying a bioprosthetic valve via a catheter (most commonly through the femoral artery) without requiring cardiopulmonary bypass or sternotomy. Randomized trials have demonstrated non-inferiority or superiority of TAVR compared to SAVR in high-risk and intermediate-risk patients. Balloon valvuloplasty alone provides only temporary relief and is not a definitive treatment.

44. D. Left circumflex artery. ST elevation in leads I, aVL, V5, and V6 indicates a lateral wall STEMI. The lateral wall of the left ventricle is primarily supplied by the left circumflex artery and its obtuse marginal branches. Leads I and aVL represent the high lateral wall, while V5 and V6 represent the inferolateral wall. The LAD supplies the anterior wall (V1-V4), and the RCA supplies the inferior wall (II, III, aVF). Recognizing ECG territory-coronary artery correlations is essential for rapid identification of the culprit vessel and anticipation of complications specific to each territory.

45. C. Digoxin toxicity. Digoxin toxicity presents with a classic triad of gastrointestinal symptoms (nausea, vomiting, anorexia), visual disturbances (yellow-green halos, blurred vision — xanthopsia), and cardiac arrhythmias. Virtually any arrhythmia can occur, but atrial tachycardia with AV block, bidirectional ventricular tachycardia, and accelerated junctional rhythm are highly characteristic. Hypokalemia (potassium 3.1 mEq/L from furosemide-induced losses) is a major precipitant because potassium and digoxin compete for the same binding site on the Na+/K+ ATPase pump. Treatment includes holding digoxin, correcting potassium and magnesium, and administering digoxin-specific antibody fragments (Digibind) for severe toxicity.

46. B. Atrial septal defect. A fixed, widely split S2 is the hallmark auscultatory finding of ASD — the split is "fixed" because the interatrial communication equalizes filling of both ventricles throughout the respiratory cycle, eliminating the normal respiratory variation in S2 splitting. The left-to-right shunt produces right heart volume overload (right atrial and ventricular enlargement) and increased pulmonary blood flow. Incomplete RBBB pattern on ECG reflects right ventricular volume overload. ASDs are the most common congenital heart defects diagnosed in adulthood, as many remain asymptomatic for decades.

47. A. INR 2.5 to 3.5. Mechanical prosthetic heart valves require lifelong anticoagulation with warfarin because of the high thrombogenicity of the mechanical components. The target INR is 2.5 to 3.5 for mechanical aortic valves and 2.5 to 3.5 for mechanical mitral valves (some guidelines target 3.0 for mitral). Direct oral anticoagulants are contraindicated for mechanical valves — the RE-ALIGN trial was stopped early due to excess thromboembolic and bleeding events with dabigatran compared to warfarin. Aspirin alone is insufficient for mechanical valve anticoagulation.

48. D. Mobitz type I (Wenckebach) second-degree AV block. Mobitz type I (Wenckebach) block is characterized by progressive PR interval prolongation with each successive beat until a P wave is not conducted (dropped QRS), after which the cycle repeats. The RR intervals progressively shorten before the dropped beat. Wenckebach block typically occurs at the level of the AV node, is usually benign and reversible, and rarely requires pacemaker implantation. Common causes include increased vagal tone,

medications (beta-blockers, calcium channel blockers), and inferior MI. It is distinguished from Mobitz type II, which has constant PR intervals before a suddenly dropped QRS.

49. C. A 36-hour washout period after discontinuing the ACE inhibitor is required before starting ARNI. Sacubitril-valsartan (ARNI) combines a neprilysin inhibitor (sacubitril) with an ARB (valsartan). Simultaneous inhibition of neprilysin and ACE dramatically increases the risk of angioedema because both enzymes degrade bradykinin. A mandatory 36-hour washout period after the last ACE inhibitor dose is required before initiating sacubitril-valsartan. The PARADIGM-HF trial demonstrated superiority of sacubitril-valsartan over enalapril in reducing cardiovascular mortality and heart failure hospitalizations. ARNI is recommended for HFrEF patients with EF ≤40% who remain symptomatic on ACE inhibitor or ARB therapy.

50. B. Supervised exercise therapy, antiplatelet therapy, statin therapy, and cardiovascular risk factor modification. Claudication (Fontaine Stage II) without rest pain or tissue loss is initially managed with a comprehensive approach. Supervised exercise therapy (walking programs of 30-45 minutes at least 3 times weekly) is the most effective non-invasive intervention, improving walking distance by 50-200%. Medical therapy includes antiplatelet therapy (aspirin or clopidogrel), high-intensity statin therapy, blood pressure control, diabetes management, and smoking cessation. Cilostazol (a phosphodiesterase III inhibitor) may be added for symptom relief. Revascularization is reserved for patients with lifestyle-limiting claudication refractory to conservative therapy or critical limb ischemia.

51. A. Variant (Prinzmetal) angina from coronary vasospasm. Variant angina is caused by transient coronary artery vasospasm producing transmural ischemia with ST elevation that resolves when the spasm subsides. It characteristically occurs at rest, often in the early morning hours, and is not provoked by exertion. Normal coronary angiography distinguishes it from fixed atherosclerotic disease. Risk factors include smoking, cocaine use, and migraine history. Treatment includes calcium channel blockers (first-line) and long-acting nitrates to prevent vasospasm. Beta-blockers should be avoided as they may worsen coronary vasospasm by permitting unopposed alpha-mediated vasoconstriction.

52. D. Dressler syndrome (post-myocardial infarction pericarditis). Dressler syndrome is an autoimmune pericarditis occurring 1 to 8 weeks after MI (or cardiac surgery), thought to result from an immune response to exposed myocardial antigens. It presents with fever, pleuritic chest pain, pericardial friction rub, and elevated inflammatory markers (ESR, CRP). ECG shows diffuse ST elevation consistent with pericarditis. Treatment is high-dose aspirin (preferred post-MI because NSAIDs may impair myocardial healing) plus colchicine. This is distinct from early post-infarction pericarditis, which occurs within the first 24-72 hours and directly overlies the infarcted myocardium.

53. B. Add diltiazem or digoxin for additional rate control. Rate control in atrial fibrillation targets a resting heart rate below 110 bpm (lenient control) or below 80 bpm (strict control) depending on symptoms and clinical context. When monotherapy with a beta-blocker is insufficient, combination therapy with a non-dihydropyridine calcium channel blocker (diltiazem) or digoxin can be added. Digoxin is particularly useful in heart failure patients because it slows the ventricular rate without negative inotropic effects.

Flecainide is a rhythm control agent that requires concurrent AV nodal blockade and is contraindicated in structural heart disease.

54. C. Constrictive pericarditis. Constrictive pericarditis results from fibrotic thickening and calcification of the pericardium that restricts cardiac filling. Prior radiation therapy and cardiac surgery are common etiologies. Kussmaul sign (paradoxical rise in JVP with inspiration, reflecting the rigid pericardium preventing normal expansion) is highly characteristic. The pericardial knock is an early diastolic sound from abrupt cessation of ventricular filling against the non-compliant pericardium. A prominent y descent reflects rapid early diastolic filling that is abruptly halted. Distinguishing constrictive pericarditis from restrictive cardiomyopathy is a critical clinical challenge, often requiring cardiac MRI or catheterization.

55. A. Coronary artery bypass grafting (CABG). CABG is the preferred revascularization strategy for patients with three-vessel coronary artery disease, particularly when the proximal LAD is involved and left ventricular function is reduced. The SYNTAX trial demonstrated superiority of CABG over multivessel PCI in three-vessel disease for reducing major adverse cardiovascular events. CABG provides more complete revascularization using arterial grafts (left internal mammary artery to LAD is the gold standard with 90%+ ten-year patency) and saphenous vein grafts. Survival benefit of CABG is greatest in patients with diabetes, reduced EF, and complex multivessel disease.

56. B. Patent ductus arteriosus. PDA is the persistence of the fetal connection between the aorta and pulmonary artery that normally closes within the first few days of life. The continuous "machinery" or "Gibson" murmur is pathognomonic, resulting from continuous flow through the ductus during both systole and diastole because aortic pressure exceeds pulmonary artery pressure throughout the cardiac cycle. Wide pulse pressure and bounding pulses result from diastolic runoff through the ductus. Treatment is closure via percutaneous device or surgical ligation. Indomethacin or ibuprofen promotes ductal closure in premature infants.

57. C. Rate control with IV diltiazem or metoprolol and initiation of anticoagulation. For hemodynamically stable patients with new-onset atrial fibrillation, the initial priority is rate control to reduce symptoms and prevent tachycardia-induced cardiomyopathy. IV diltiazem or metoprolol achieves rapid rate control. Anticoagulation is initiated based on CHA_2DS_2-VASc score. For atrial fibrillation of less than 48 hours duration, cardioversion may be performed after adequate anticoagulation without TEE. For AF duration greater than 48 hours or unknown, either 3-4 weeks of anticoagulation or TEE to exclude left atrial appendage thrombus is required before cardioversion.

58. D. Mitral regurgitation. Mitral regurgitation produces a holosystolic (pansystolic) murmur heard best at the apex that radiates to the axilla, reflecting blood flowing from the high-pressure left ventricle back into the left atrium throughout systole. A flail leaflet (from ruptured chordae tendinae or papillary muscle) is a common cause of severe acute mitral regurgitation. Unlike tricuspid regurgitation (which increases with inspiration — Carvallo sign), the murmur of mitral regurgitation does not change significantly with respiration. Severe mitral regurgitation causes left atrial and ventricular volume overload, leading to pulmonary congestion and heart failure.

59. B. Long-acting nitrate (isosorbide mononitrate) or amlodipine. For patients with stable angina on adequate beta-blocker therapy who continue to have anginal symptoms, additional antianginal agents should be added. Long-acting nitrates (isosorbide mononitrate) reduce preload and cause coronary vasodilation. Dihydropyridine calcium channel blockers (amlodipine, nifedipine) reduce afterload and cause coronary vasodilation. Both are effective add-on agents for symptom relief. A nitrate-free interval of 10-14 hours daily is required with long-acting nitrates to prevent tolerance. Ranolazine is another option for refractory angina.

60. A. Libman-Sacks endocarditis. Libman-Sacks endocarditis is a non-infectious form of endocarditis associated with systemic lupus erythematosus, characterized by sterile verrucous vegetations on the valve leaflets (most commonly the mitral valve on the ventricular surface). Negative blood cultures distinguish it from infective endocarditis. The vegetations are composed of fibrin, immune complexes, and inflammatory debris. While often clinically silent, they can cause valvular regurgitation, embolization, or serve as a nidus for secondary infection. Treatment addresses the underlying SLE with immunosuppression. Marantic endocarditis is associated with advanced malignancy and hypercoagulable states.

61. C. Multifocal atrial tachycardia. MAT is characterized by an irregular rhythm with at least three morphologically distinct P wave morphologies, varying PR intervals, and varying P-P intervals. It is strongly associated with severe pulmonary disease (COPD, acute exacerbation), hypoxemia, and right heart failure. The irregular rhythm can mimic atrial fibrillation, but the presence of discrete P waves (albeit of multiple morphologies) distinguishes MAT. Treatment focuses on correcting the underlying pulmonary disease, hypoxemia, electrolyte abnormalities (particularly hypomagnesemia and hypokalemia), and rate control with non-dihydropyridine calcium channel blockers if needed.

62. D. Ventricular septal rupture. Ventricular septal rupture is a catastrophic mechanical complication occurring 3-7 days after STEMI (during the period of coagulative necrosis when the infarcted myocardium is weakest). It presents with a sudden, loud holosystolic murmur with a palpable thrill at the left sternal border and rapid hemodynamic deterioration with cardiogenic shock. Inferior MIs produce posterior septal ruptures, while anterior MIs produce apical septal ruptures. Differentiation from acute mitral regurgitation (from papillary muscle rupture) is made by the location of the murmur, thrill, and echocardiographic demonstration of the septal defect. Emergent surgical repair is required.

63. B. Acute arterial embolism from atrial fibrillation. The sudden onset of a cold, pale, pulseless extremity with severe pain — the "6 P's" (pain, pallor, pulselessness, poikilothermia, paresthesias, paralysis) — is the classic presentation of acute arterial occlusion. Atrial fibrillation is the most common source of peripheral arterial embolism, with thrombus forming in the left atrial appendage and embolizing to the arterial circulation. The lower extremities are the most common site, with the femoral bifurcation being the most frequent location. This is a vascular emergency requiring emergent revascularization (surgical embolectomy or catheter-directed thrombolysis) within 6 hours to prevent irreversible limb ischemia.

64. A. Vasovagal (neurocardiogenic) syncope. Vasovagal syncope is the most common cause of syncope, resulting from an abnormal autonomic reflex that produces bradycardia and vasodilation in response to a trigger (prolonged standing, pain, emotional stress, heat). Tilt-table testing reproducing symptoms (hypotension and/or bradycardia) in a patient with no structural heart disease confirms the diagnosis. Treatment includes patient education, avoidance of triggers, adequate hydration and salt intake, physical counterpressure maneuvers, and in refractory cases, midodrine. Pacemaker implantation is rarely needed and reserved for patients with recurrent syncope predominantly from the cardioinhibitory component.

65. C. IV amiodarone. For hemodynamically stable ventricular tachycardia (wide-complex tachycardia with AV dissociation in a patient with prior MI), IV amiodarone is the preferred antiarrhythmic. AV dissociation (atrial and ventricular activity occurring independently) is essentially diagnostic of VT in the setting of wide-complex tachycardia. IV adenosine should not be used for VT as it is ineffective and may cause hypotension. IV verapamil and diltiazem are contraindicated in VT because they can cause hemodynamic collapse. If the patient deteriorates hemodynamically at any point, immediate synchronized cardioversion is indicated.

66. D. P2Y12 inhibitor (clopidogrel or ticagrelor) as an alternative. In a patient with true aspirin allergy (anaphylaxis), aspirin desensitization should be considered for acute STEMI management given aspirin's mortality benefit. However, when immediate desensitization is not possible, a P2Y12 inhibitor (clopidogrel or ticagrelor) is the most important alternative antiplatelet agent. Clopidogrel or ticagrelor inhibit platelet aggregation by a different mechanism (ADP receptor blockade) and provide significant antiplatelet benefit. Aspirin desensitization protocols can be performed subsequently in a monitored setting. Warfarin is not an antiplatelet agent and would not be appropriate for acute coronary intervention.

67. B. Beta-blockers reduce harmful neurohormonal activation, reverse ventricular remodeling, and reduce mortality. In HFrEF, chronic sympathetic activation is initially compensatory but becomes maladaptive, causing direct myocardial toxicity, arrhythmogenesis, and adverse ventricular remodeling (progressive dilation and dysfunction). Beta-blockers (carvedilol, metoprolol succinate, bisoprolol) attenuate this harmful neurohormonal activation, reduce heart rate (allowing improved diastolic filling), reverse remodeling, and significantly reduce mortality (approximately 30% relative reduction in major trials). Benefits develop over weeks to months, and initial worsening of symptoms may occur. Beta-blockers should be initiated at low doses and titrated gradually to target doses.

68. A. Anticoagulation with a DOAC or LMWH bridged to warfarin. Acute deep vein thrombosis confirmed by compression ultrasonography requires immediate anticoagulation to prevent thrombus propagation, pulmonary embolism, and post-thrombotic syndrome. First-line options include direct oral anticoagulants (rivaroxaban or apixaban without bridging, or LMWH bridged to dabigatran or edoxaban) or traditional LMWH bridged to warfarin with a target INR of 2.0-3.0. The duration of anticoagulation for a provoked DVT (postoperative) is typically 3 months. IVC filters are reserved for patients with absolute contraindications to anticoagulation or recurrent PE despite adequate anticoagulation.

69. C. Fontaine stage IV (critical limb ischemia with tissue loss). The Fontaine classification stages PAD severity: Stage I (asymptomatic), Stage IIa (mild claudication), Stage IIb (moderate to severe

claudication), Stage III (ischemic rest pain), and Stage IV (ulceration, gangrene, or tissue loss). This patient has rest pain, severely reduced ABI (0.35, where less than 0.40 indicates severe ischemia), and a non-healing ulcer — all features of critical limb ischemia (Stage IV). Critical limb ischemia threatens limb viability and requires urgent vascular evaluation for revascularization (endovascular or surgical) to prevent amputation. Without revascularization, major amputation rates approach 40% at one year.

70. D. Beta-blocker therapy and consideration of ICD. Long QT syndrome is a channelopathy characterized by prolonged ventricular repolarization (QTc above 500 ms is high-risk) predisposing to polymorphic ventricular tachycardia (torsades de pointes) and sudden cardiac death. First-line treatment for congenital LQTS is beta-blocker therapy (nadolol or propranolol), which reduces cardiac events by attenuating sympathetic stimulation. ICD implantation is recommended for patients with prior cardiac arrest, syncope despite beta-blocker therapy, or very high-risk features. Avoidance of QT-prolonging medications is essential. Family screening with ECG and genetic testing is recommended.

71. B. Takotsubo (stress) cardiomyopathy. Takotsubo cardiomyopathy (also called stress cardiomyopathy or "broken heart syndrome") is characterized by transient left ventricular dysfunction, often triggered by intense emotional or physical stress, that mimics acute MI with ST elevation and troponin elevation but without obstructive coronary artery disease. Apical ballooning with preserved basal function on ventriculography is pathognomonic. It predominantly affects postmenopausal women and is thought to result from catecholamine-mediated myocardial stunning. The prognosis is generally excellent with recovery of ventricular function within weeks to months with supportive care.

72. A. At least 6 to 12 months. After drug-eluting stent (DES) placement, dual antiplatelet therapy (aspirin plus a P2Y12 inhibitor) is recommended for a minimum of 6 to 12 months to prevent stent thrombosis during the period of endothelialization. Premature discontinuation of DAPT significantly increases the risk of stent thrombosis, a catastrophic complication with high mortality. After the initial DAPT period, aspirin monotherapy or P2Y12 inhibitor monotherapy is continued indefinitely. In some high-bleeding-risk patients, shorter DAPT durations (1-3 months) may be considered, while extended DAPT beyond 12 months may benefit patients with high ischemic risk and low bleeding risk.

73. D. Hold warfarin, administer oral vitamin K, and recheck INR in 24 hours. For supratherapeutic INR above 4.5 without active bleeding, warfarin should be held and oral vitamin K (2.5-5 mg) administered to partially reverse the anticoagulation effect. INR should be rechecked in 24 hours. IV vitamin K produces a more rapid reversal but is reserved for serious or life-threatening bleeding. Fresh frozen plasma or prothrombin complex concentrate (PCC) is indicated for active, serious bleeding requiring immediate reversal. Continuing warfarin at the current dose with an INR of 8.5 would be dangerous, significantly increasing bleeding risk including intracranial hemorrhage.

74. C. Systemic thromboembolism (stroke). Left ventricular mural thrombus forms on akinetic or dyskinetic myocardium following transmural anterior MI due to blood stasis in the aneurysmal segment. The thrombus can fragment and embolize systemically, with stroke being the most devastating consequence (embolization to cerebral arteries). Other embolic destinations include the kidneys, spleen, mesentery, and extremities. Anticoagulation with warfarin or a DOAC is recommended for documented

LV thrombus to reduce embolic risk, typically for at least 3 to 6 months with reassessment by repeat imaging. The large anterior aneurysm and severely reduced EF further increase thrombotic risk.

75. B. Hypertensive emergency (malignant hypertension). Hypertensive emergency is defined as severely elevated blood pressure (typically above 180/120 mmHg) with evidence of acute target organ damage. This patient demonstrates multiple organ involvement — neurologic (headache, blurred vision from hypertensive encephalopathy), renal (acute kidney injury with elevated creatinine, proteinuria, RBC casts from malignant nephrosclerosis), and ophthalmologic (papilledema and flame hemorrhages from malignant hypertensive retinopathy). Treatment requires immediate IV antihypertensive therapy (nicardipine, nitroprusside, or labetalol) in an ICU setting with a goal of reducing MAP by no more than 25% in the first hour to prevent hypoperfusion injury.