A 38 year old African-American male presents to primary care office for routine physical examination. He expressed concern about his cardiovascular risk due to his strong family history of coronary artery disease. He has no medical problems, exercises once weekly, and review of systems is negative for any symptoms. BP is 122/78, HR 75, BMI 25.8. Exam unremarkable. Lipid profile: Chol 211, HDL 49, LDL 122, Triglycerides 144. He denies smoking or illicit drug use. Which is the incorrect statement?

A. Cardiovascular death rates increase as the patient ages  
B. Cardiovascular death rates have decreased recently  
C. Routine aerobic exercise may reduce his risk for MI  
D. Death from cardiovascular disease peaked in the 1970s  
E. Black ethnicity is not associated with increased stroke risk

A 51-year old man with known diabetes and coronary artery disease presents with acute chest pain, dyspnea, and mild hypotension with electrocardiogram demonstrating 2.8 mm ST elevations in leads II, III, and avF. He had a percutaneous coronary angioplasty with placement of a drug eluting stent in the proximal right coronary artery 25 days ago after a positive stress test. All are common causes of in-stent thrombosis except:

A. Multiple, consecutive long stents in the artery  
B. Use of clopidogrel instead of prasugrel  
C. Diseased coronary vessel with poor distal run-off  
D. Inadequate expansion of the stent  
E. Non-adherence to clopidogrel and aspirin

A 29-year old female presents to the emergency room at 30-weeks gestation with progressive dyspnea, orthopnea, and fatigue. She has no prior medical problems. Physical exam is notable for opening snap after S2 with a I/IV diastolic murmur heard best in left lateral decubitus position. HR is 108 beats/min and BP is 130/84 mm Hg. She receives oxygen, IV furosemide, and diltiazem. Echocardiogram demonstrates mitral valve area of 0.6 cm² and normal left ventricular ejection fraction. Which is the best approach for management?

A. Start carvedilol  
B. Start isosorbid  
C. Balloon valvuloplasty  
D. Immediate Cesarean section  
E. Start digoxin

A 58-year old man with history of hypertension presents to emergency room with acute chest pain radiating to back with hypotension and a new, large left effusion on chest x-ray. Systolic blood pressure differs in both arms by 26 mm Hg. Appropriate steps in management include:

A. Treat with sodium nitroprusside alone  
B. Start a loop diuretic alone  
C. Refer for urgent transthoracic echocardiogram  
D. Refer for urgent surgical repair for proximal dissection  
E. Narcotics for pain relief alone
**Question #5**

A 63-year old man has recurrent non-sustained ventricular tachycardia (up to 6-beats) in the setting of an acute myocardial infarction. Mild signs of heart failure are present and successful stent is placed in left anterior descending artery. Ejection fraction is 25%. Which statement is false?

A. ACE-inhibitors improve outcomes in this population  
B. Implantable defibrillator should be performed prior to discharge  
C. Lidocaine should not be started at this time  
D. Beta blockers are beneficial and should be started once congestion resolved  
E. Eplerenone may reduce the risk of sudden death  

**Question #6**

An 44-year old woman presents to the emergency room following a motor vehicle accident in which she was wearing a seatbelt. She noted mild palpitations while driving and awakens finding herself on the side of the road. Past medical history is notable for myocardial infarction 4 years ago and hypertension. Physical exam is remarkable for mild facial lacerations. What is the most likely cause of this event?

A. Hysterical fainting  
B. Epilepsy  
C. High-degree AV block or sinus bradycardia  
D. Neurocardiogenic syncope  
E. Ventricular tachycardia  

**Question #7**

Which of the following is false related to patients undergoing percutaneous coronary intervention?

A. In patients with CKD (creatinine clearance<60 mL/min), the volume of contrast media should be minimized  
B. Administration of N-acetyl-L-cysteine is useful to prevent contrast-induced acute kidney injury  
C. Patients with prior reaction to contrast can proceed with catheterization with appropriate prophylaxis  
D. Administration of high-dose statin is reasonable before PCI to reduce risk of peri-procedural MI  
E. Patients not on aspirin should be given non-enteric aspirin 325 mg before PCI  

**Question #8**

Each of the following statements regarding troponin elevation is true EXCEPT:

A. Cardiac troponin T 0.13 (ULN 0.1) is associated with worse outcomes in an acute coronary syndrome  
B. Troponin may be elevated in asymptomatic patients with advanced kidney disease  
C. Non-ischemic cardiomyopathy patients admitted with mild troponin elevations in the setting of decompensated heart failure have a worse prognosis than patients with normal troponins  
D. Troponin values may remain elevated for 3 weeks following an acute myocardial infarction  
E. Troponin elevation is not a predictor of mortality in setting of sepsis

**Question #9**

Each of the following statements regarding the therapy of heart failure is correct EXCEPT:

A. Hydralazine plus isosorbide dinitrate improves survival by 43% in self-described African-American heart failure patients who are taking ACE-inhibitors and beta-blockers  
B. In stable heart failure patients, beta-blocker therapy improves life expectancy by 34%  
C. Cardiac resynchronization therapy improves survival, exercise capacity, and quality of life in patients with mild heart failure patients (NYHA Class II) with left bundle branch block and QRS of 160 milliseconds based upon MADIT-CRT trial  
D. Angiotensin II receptor blockers in addition to ACE-inhibitors is associated with a 15% improvement in cardiovascular survival and heart failure hospitalizations  
E. Aldosterone-receptor antagonist reduces all-cause mortality in patients with NYHA Class III or IV heart failure. MI patients with heart failure, and older patients with milder forms of heart failure following hospitalization

**Question #10**

A 63-year old female who had not seen a doctor in 10 years presents to clinic for a routine visit. She takes no medicines and denies allergies or past medical history. She noticed her BP was 170/100 at a drug store 3 weeks ago prompting the visit. She has tried decreasing salt intake. Exam demonstrates BP 166/106, HR 76, AV nicking and loud S2. Routine labs and ECG are normal. Which is the best option?

A. Start beta-blocker  
B. Further lifestyle change and recheck BP in 4-6 weeks  
C. Start ACE-inhibitor  
D. Start thiazide diuretic  
E. Schedule a stress test
Question #11
A 76-year old man with mitral valve repair, 20 year history of diabetes mellitus presents with new onset atrial flutter with heart rate of 82 beats/minute and blood pressure of 149/84 mm Hg. Echocardiogram reveals LVEF 56%. All are false statements except:
A. Restoration of sinus rhythm reduces risk of stroke compared with rate control and anticoagulation
B. Patient can be treated with dabigatran instead of warfarin
C. Warfarin should be started to reduce risk of stroke
D. The combination of aspirin and clopidogrel is equivalent to warfarin
E. Patient can be cardioverted now and complete 4 weeks of warfarin

Question #12
81-year old woman presents for a routine clinical visit for a physical and her exam is notable for splitting of the second heart sound. Which statement regarding splitting of the second heart sounds is NOT true?
A. Paradoxical splitting of S2 is expected in patients with a RV paced rhythm
B. Delayed closure of the pulmonic valve with inspiration contributes to physiologic splitting
C. Fixed splitting of S2 is present with an ostium secundum atrial septal defect
D. Severe pulmonary hypertension is associated with an accentuated P2
E. Right bundle branch block is associated with paradoxical splitting of S2

Question #13
A 59-year old woman with history of moderate mitral regurgitation presents for routine office visit. She is asymptomatic and has a past medical history of controlled hypertension, diabetes, and dyslipidemia without history of endocarditis. She is scheduled for a dental extraction next week. What is the best recommendation for SBE prophylaxis?
A. Amoxicillin 2 grams orally 1 hour before procedure
B. Clindamycin 600 mg orally 1 hour before procedure
C. Ampicillin 2 grams IV 30 minutes before procedure
D. All are acceptable options
E. None of the above

Question #14
A 63-year old man presents to the emergency room with pleuritic chest pain and mild dyspnea after returning from a trip to China. Examination reveals a positive Homans’ sign in the left leg. Among the following tests, which one is not compatible with a pulmonary embolism?
A. Cardiac troponin I of 1.4 ng/mL
B. O2 saturation of 95%
C. Normal perfusion lung scan
D. Normal electrocardiogram
E. Brain natriuretic peptide of 380 pg/mL

Question #15
A 56-year old male presents to clinic for peri-operative evaluation prior to elective cholecystectomy. He works full time in construction and exercises by walking ~40 minutes several times per week. Her past medical history is notable for hypertension, hypercholesterolemia, and a myocardial infarction 3 years ago. Risk factors associated with cardiac complications after major non-cardiac surgery include all of the following EXCEPT:
A. Severe mitral stenosis
B. Stable class II angina
C. Acute myocardial infarction 2 months ago
D. More than 5 premature ventricular contractions (PVC)/minute on a pre-operative ECG
E. Presence of a S3

Question #16
A 56-year old male presents to clinic for peri-operative evaluation prior to elective cholecystectomy. He works full time in construction and exercises by walking ~40 minutes several times per week. Her past medical history is notable for hypertension, hypercholesterolemia, and a myocardial infarction 3 years ago. What is the best management?
A. Coronary angiography prior to surgery
B. Perform cholecystectomy only if emergency
C. Stress test with MIBI or echocardiogram
D. Proceed with surgery and ensure beta-blocker use
E. Stress test without imaging
Question #17
Each of the following is a contributing factor to the development of essential hypertension except:

A. Obesity
B. Alcohol consumption
C. Salt intake
D. Cigarette smoking
E. Lack of exercise

Question #18
A 52 year old female with a history of breast cancer treated with radiation therapy and chemotherapy presents with worsening dyspnea and right-sided heart failure signs. Examination reveals a BP 100/75 mm Hg, HR 85 beats/minute, prominent X descent with venous distension, non-palpable impulse, ascites, and 3+ edema. Echocardiogram reveals a large pericardial effusion, EF of 55% with septal bounce, and flow reversal of hepatic vein flow during inspiration. Which of the following statements is not true?

A. The next best step is left and right heart catheterization with maneuvers
B. BNP can be elevated in cancer patients developing Stage B cardiomyopathy
C. IV furosemide should be started immediately
D. Echocardiography can distinguish restrictive from constrictive physiology
E. Ventricular interdependence is both sensitive and specific for constrictive pericarditis

Question #19
Which drug is most associated with drug-induced lupus?

A. Verapamil
B. Procainamide
C. Amiodarone
D. Lidocaine
E. None of the above

Question #20
A 79-year old man returns for a follow-up visit after an anterior myocardial infarction 2 months ago complicated by Killip Class 3 heart failure. On maximal medical therapy, he currently has no symptoms of heart failure. A follow-up echocardiogram reveals an improved left ventricular ejection fraction from 20% at the time of MI to 33% today. What would you do next?

A. Consider ICD only if he were to become symptomatic (NYHA 2 or 3)
B. Refer for an implantable cardioverter-defibrillator (ICD)
C. Repeat echocardiogram in another month to see if LVEF improves prior to implanting ICD
D. Consider cardiac MRI to assess LVEF
E. Educate patient about the contraindication of ICD due to his age

Question #21
A 73-year old man with a 25 pack year history of smoking (stopped 6 years ago), hypertension, and diabetes mellitus presents to your office for an initial visit. Fasting lipid profile reveals total cholesterol 233 mg/dL, HDL 51 mg/dL, LDL131 mg/dL, and triglycerides 140 mg/dL. In addition to diet modifications, routine exercise, and blood pressure control, what would you do to manage this patient?

A. Refer for exercise test and start statin if positive
B. Start simvastatin 10 mg nightly
C. Reassure her that she is at target cholesterol goals
D. Start atorvastatin 80 mg nightly
E. Start niacin 1 gram daily with aspirin

Question #22
A previously healthy 38 year-old woman presents to the emergency room with pleuritic chest pain that improves when she sits forward. She had been hiking in the woods and noticed a rash on her left thigh. ECG reveals PR depression and ST elevation diffusely. Each of the following statements regarding this patient’s condition is true EXCEPT:

A. This is a common cause of non-ischemic cardiomyopathy
B. Steroids may improve symptoms
C. She may develop AV block
D. Indomethacin may help alleviate the pain
E. Myocarditis may occur in 10% of patients
**Question #23**

A 61-year old woman presents to your office for consultation regarding management of her coronary artery disease. She has a 60% left main stenosis and intermittent angina. All of the following are true EXCEPT:

A. CABG to improve survival is recommended for patients with significant (>50% diameter stenosis) left main coronary artery stenosis

B. PCI to improve survival is reasonable in patients with UA/NSTEMI with an unprotected left main coronary artery and the patient is not a CABG candidate

C. CABG to improve survival is beneficial in patients with significant (>70% diameter) stenoses in 3 major coronary arteries or in the proximal LAD plus 1 other major coronary artery

D. CABG or PCI should not be performed to improve symptoms in patients with left main<50% or non-left main<70%

E. Transmyocardial laser revascularization (TMR) may improve survival

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**Question #24**

A 64 year old man has a history of Canadian class 2 stable angina. He has abstained from smoking for 3 years and is compliant with his medications. His body mass index (BMI) is 36 kg/m² and waist circumference is 48 inches. He exercises aerobically once weekly. Which statement below is false?

A. Percutaneous angioplasty of a total occluded lesion may improve his quality of life

B. Chelation therapy has been proven to be beneficial

C. An influenza shot is recommended annually

D. Lipid lowering can be intensified if LDL is >100 mg/dL

E. Caloric restriction is more important than the specific type of diet (e.g., “low carbohydrate diet” over “low-fat diet”) in order to achieve sustained weight loss

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**Question #25**

A 65 year old woman 4 days post acute antero-septal MI has acute onset respiratory distress, chest pain, and syncope. Blood pressure is 66/50 on arrival to emergency department with jugular venous distension, harsh holosystolic murmur, and diastolic rumble consistent with mitral stenosis. What is the most likely problem?

A. Papillary muscle rupture and mitral regurgitation

B. Free wall rupture

C. Acute heart failure due to right ventricular dysfunction

D. Ventricular septal defect

E. Sustained ventricular tachycardia

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**Question #26**

A 39 year old woman who is 30-weeks pregnant and presents to emergency room with mild dyspnea on exertion. Examination reveals BP 110/70 mm Hg, HR 95 beats/minute, clear chest, jugular venous pressure 7 cm water, and III/VI holosystolic murmur at apex. Echocardiography confirms moderate mitral regurgitation. Estimated PA pressure is 30+ right atrial pressure. Management option includes which of the following?

A. Start low-dose furosemide

B. Arrange for emergent delivery of fetus

C. Plan mitral valve repair prior to delivery

D. Left and right heart catheterization

E. Proceed with pregnancy with close follow-up

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**Question #27**

A 59 year old woman who is 30-weeks pregnant and presents to emergency room with mild dyspnea on exertion. Examination reveals BP 110/70 mm Hg, HR 95 beats/minute, clear chest, jugular venous pressure 7 cm water, and III/VI holosystolic murmur at apex. Echocardiography confirms moderate mitral regurgitation. Estimated PA pressure is 30+ right atrial pressure. Management option includes which of the following?

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D. Left and right heart catheterization

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**Question #28**

A 39 year old woman who is 30-weeks pregnant and presents to emergency room with mild dyspnea on exertion. Examination reveals BP 110/70 mm Hg, HR 95 beats/minute, clear chest, jugular venous pressure 7 cm water, and III/VI holosystolic murmur at apex. Echocardiography confirms moderate mitral regurgitation. Estimated PA pressure is 30+ right atrial pressure. Management option includes which of the following?

A. Start low-dose furosemide

B. Arrange for emergent delivery of fetus

C. Plan mitral valve repair prior to delivery

D. Left and right heart catheterization

E. Proceed with pregnancy with close follow-up
**Question #29**

An 45-year old man presents to the emergency room with dyspnea. His blood pressure was 228/110 mm Hg and the physical examination was only notable for faint crackles. What is the best next option?

A. Confirm blood pressure within 2 months
B. Admit to initiate treatment, possibly with IV therapy
C. Discuss risk factor/behavioral changes and reassess in 2 weeks
D. Consider starting thiazide diuretic and f/u in 1 week
E. Start with calcium channel blocker and f/u in 1 week

**Question #30**

An 45-year old man presents to the emergency room with dyspnea. His blood pressure was 228/110 mm Hg and the remainder of the physical examination was only notable for faint crackles. Which of the following findings are characteristics of a hypertensive crisis?

A. Retinal hemorrhages
B. Microangiopathic hemolytic anemia
C. Azotemia and proteinuria
D. Pulmonary edema and jugular venous distension
E. All are characteristics of hypertensive crisis

**Question #31**

A 72-year old man with a history of severe mitral regurgitation with a LVEF of 50% with LVEDD 59 mm presents for a second opinion. Dyspnea occurs when walking up one flight of stairs. Which is the best option for management?

A. Refer for mitral valve repair
B. Refer for mitral valve replacement
C. Follow serial echocardiograms and plan surgery when LVEF decreases below 35%
D. Start ACE-inhibitor to attenuate the progression of LV dilatation
E. Refer for cardiac resynchronization to reduce mitral regurgitation

**Question #32**

A 49 year old woman presents with palpitations. ECG reveals new-onset atrial fibrillation and TSH is high. Common cardiac findings in patients with hypothyroidism include each of the following EXCEPT:

A. Decreased blood pressure
B. Decreased heart rate
C. Pericardial effusion
D. Decreased cardiac output
E. Prolonged QT interval on the electrocardiogram