

New questions for the Cardiovascular Review Book CEU test. Prepared May 1, 2007 by Linda Baas

Each item has the correct answer marked with an *. The rationale for the questions is in italics following the question.

1. Which of the following best describes certification?
 - a. Legal recognition by a state board of nursing.
 - b. Evidence of completion of a process designed to demonstrate competence in a specific area. *
 - c. Academic achievement demonstrated by attaining a degree.
 - d. A mandatory process imposed by all employers to maintain a job.

Other answers demonstrate licensure, awarding of degrees and job requirements. Certification is a voluntary undertaking to demonstrate expertise in an area of nursing.

2. Which of the following presents an ethical dilemma?
 - a. Two family members with opposing desires for the care of their 78 year old mother who had a stroke and is unresponsive. One wants everything done while the other wants palliative care because she was told mother wanted.*
 - b. Two members of the staff who do not like to work together. They refuse to help one another.
 - c. Two research studies with conflicting results. Each says a different drug regime is better for treatment of the same condition.
 - d. Two managers who are both trying to use the same resources for their staff. They are vying for limited financial resources.

An ethical dilemma exists when there are two alternative approaches and neither is clearly recognized as ideal. In this case one approach is based on the principle of justice and the other on autonomy. The other situations deal with management and research concerns. There is no ethical concern in them.

3. A nurse wants to know “which of 3 types of wound dressings results in the fastest healing rate.” In order to accomplish this goal, the best method would be:
 - a. qualitative descriptive study using in depth interviews.
 - b. epidemiologic study of the Framingham population
 - c. a historical study of how nurses used dressings in the past
 - d. an experimental or quasi-experimental design with some subjects getting each of the three types of dressings and measuring the healing at specific time points. *

An experimental design entails random assignment to the study groups and an intervention, such as different dressing types. A quasiexperimental design is the same without random assignment to groups.

4. A designated manager of a nursing unit holds what type of power by virtue of holding the position?

- a. expert
- b. legitimate *
- c. unauthorized
- d. laize-fairre

While a manager may also possess expert power, the position provides legitimate authority. Laize fairer refers to a style of management.

- 5. Mr. Jones' has a long standing diagnosis of hypertension. Today his blood pressure is 172/104. This is considered to be:
 - a. Prehypertension
 - b. Stage I hypertension
 - c. Stage II hypertension *
 - d. Signs of Target Organ Dysfunction

Stage II hypertension, as defined by the JNC 7 is greater than 160 systolic or 100 diastolic pressure. Target organ dysfunction is said to occur when there is retinopathy, nephropathy, cerebral or coronary insufficiency.

- 6. Afterload is an important contributor to cardiac output. Many drugs are used to reduce or increase afterload. The best definition for afterload is:
 - a. The amount of resistance the heart must overcome in order to eject the stroke volume. *
 - b. The amount of stretch on the ventricular muscle before contraction.
 - c. The amount of oxygen the myocardium needs to do it's work.
 - d. The amount of heart rate variability one has.

Afterload is best reflected by systemic vascular resistance. Preload is volume overload. Myocardial oxygen consumption is a reflection of the workload of the heart and is estimated by heart rate and systolic blood pressure or it can be directly measured by gas exchange methods.

- 7. Hydrochlorathiazide is used to treat hypertension. You can expect the anti-hypertensive effect of this drug to be due to?
 - a. inhibition of the angiotension converting enzyme
 - b. diuresis and vasodilatation. *
 - c. blocking the beta receptors.
 - d. calcium channel blockade.

While you may get a mild diuretic effect within the first few days of starting the drug. After about 3 weeks you begin to see the relaxation of the peripheral vascular system resulting in decreased afterload and lower blood pressure. Remember that beta blockers end in olol, ACE-I end in pril. and many of the calcium channel inhibitors end in dipine.

- 8. Nitroglycerin is used for the treatment of angina. A specific concern related to the long term use of this drug is:

- a. down regulation of receptor sites
- b. tolerance developing requiring larger doses. *
- c. development of profound hypertension when given with sildenafil (Viagra).
- d. development of A-V heart block when given with hydralazine.

Over time the person requires higher doses of nitroglycerine in order to maintain the same vasodilator and anti-angina effect. The best way to prevent this is to have a nitrate free period each day. So, if a person is using a transdermal patch, removing it at night will provide a nitrate free period and reduce the risk of tolerance. Down regulation of receptor sites is seen with beta blockers. Nitrates and sildenafil will result in profound drop in blood pressure. There is no effect of nitrates on the conduction system of the heart.

- 9. All of the following categories are useful in the treatment of hypertension except:
 - a. Venous and arterial dilators
 - b. Angiotensin Converting Enzyme Inhibitors (ACE-I) and Angiotensin II Receptor Blockers.
 - c. Beta Blockers and diuretics
 - d. Aldosterone and Ephedrine *

Aldosterone and ephedrine will increase the blood pressure. Remember that spironolactone works by inhibiting Aldosterone. All other categories of drugs will decrease blood pressure.

- 10. When triglycerides are greatly elevated, what aspect of the lipid profile will not be accurate?
 - a. LDL Cholesterol *
 - b. HDL Cholesterol
 - c. Both HDL and LDL Cholesterol
 - d. Only Total Cholesterol

LDL is calculated while triglycerides, HDL and total cholesterol are actually measured. Great error in estimating LDL can occur with elevated (greater than 350) triglycerides.

- 11. Mrs. Thomas is a 55 year old woman with dilated cardiomyopathy and a left ventricular ejection fraction of .25. She has a third heart sound on auscultation and a systolic murmur heard best in the 5th intercostals space in the anterior auxiliary line. You suspect that she also has:
 - a. Diastolic Heart failure
 - b. Aortic insufficiency
 - c. Mitral regurgitation *
 - d. Mitral stenosis

Mitral regurgitation is a common problem that results from the remodeling that occurs with heart failure and a greatly stretched or dilated left ventricle. As the ventricle dilates, the papillary muscles and chordae tendoneae are pulled and the valve leaflets are unable

to close adequately. This results in regurgitant blood flow from the left ventricle to the left atrium during ventricular systole.

12. A patient comes to the emergency department after a syncopal episode while at work. On examination a III/VI systolic murmur is noted at the 2nd right intercostals space. The most likely reason for the syncope is:
- angina
 - transient pulmonary hypertension
 - mitral insufficiency
 - aortic stenosis *

When the aortic valve is stenosed or narrowed, turbulent flow will result in a systolic murmur in the area described.

13. Mr. Walker tells you that he is having cramping pain in the calf of his right leg when he walks. When he rests it is relieved. What is the most likely cause for this type of pain?
- Peripheral edema
 - Deep vein thrombosis
 - Pulmonary embolus
 - Claudication from Peripheral arterial disease. *

Claudication pain occurs with exercise and is relieved by rest. The pain of DVT occurs at rest and exercise. Edema may result in mild discomfort but it would also be constant. PE will cause chest pain, dyspnea, and hypoxemia.

14. Which test is the best initial screening test for this patient (see above) with exercise induced unilateral leg pain?
- Ankle brachial index*
 - Venous duplex study
 - Graduated Treadmill Exercise test
 - D-dimer study

Mr. Walker's pain sounds like classic claudication pain which is the result of peripheral arterial disease. The test that will be most useful as an initial screening is the Ankle Brachial index. If it is less than .9 there is some degree of narrowing of flow to the lower extremity involved..

15. Chest pain that occurs seven days after an acute myocardial infarction that is associated with auscultation of an intermittent rub in the mitral area and an ECG with ST elevation in most leads is probably:
- extension of the area of infarction
 - infective endocarditis
 - atrial fibrillation
 - pericarditis.

Pericarditis is an inflammation that often follows a myocardial infarction. The inflammation often results in: positional chest pain that may be relieved by sitting up and leaning forward, auscultation of a friction rub that may be intermittent or positional, and global ECG changes of elevated ST segments or T wave changes. It may also be accompanied by other signs of inflammation such as fever.

16. Mr Thomas has an ECG performed when he comes to the Emergency Department complaining of sudden shortness of breath. The ventricular rate is 136, with a and completely irregular. He has no P waves on the ECG. QRS duration is .10 seconds, ST segments are isoelectric, and T waves are normal size and upright. He has no abnormal Q waves. Most likely he has:
- Atrial fibrillation *
 - Anterior wall infarction
 - A right bundle branch block
 - First degree AV block.

Classic signs of atrial fibrillation are irregularly irregular rhythm with the absence of P waves. There are no Q waves or ST segment changes to suspect a myocardial infarction. The QRS duration is normal so there is no bundle branch block. There is no PR interval if there are no P waves, thus eliminating first degree heart block as a possibility.

17. Ms Smith is experiencing a blockage of a cerebral vessel on the right side of her brain in the motor area. This type of Cerebral Vascular Attack would be expected to cause:
- Paralysis of both legs.
 - Right side paralysis
 - Left side paralysis *
 - It is impossible to predict.

A CVA on one side of the brain will affect the opposite side of the body because the nerve fibers cross in the spinal column. So, a right side CVA will result in left sided motor changes.

18. Patient education is most effective when:
- the person asks questions and there is repetition of the material using multiple types of approaches *
 - when there is a crisis and the person is stressed and highly agitated.
 - when there is pressure from family members.
 - when the person is not interested in changing behavior.

People are most likely to learn when they are motivated to do so, are not highly stressed, and when principles of adult education are applied. Adults learn best when the information is relevant to them, when you use multiple senses (hearing, seeing, doing) and there is repetition.

19. The most effective coping mechanism is:
- emotional based mechanisms.
 - smoking cigarettes.
 - what ever coping mechanism works best for the person in a specific situation. *
 - cognitive based mechanisms.

There is no one universal coping mechanism that works best for all people. It is very individually based and situational based.

20. Digoxin is one of the oldest drugs used in the treatment of heart failure. Which of the following is (are) signs of digoxin toxicity?
- arrhythmias including heart block
 - nausea and vomiting
 - visual disturbances including seeing yellow halos or spots
 - all of the above *

Digoxin has all of these potential adverse reactions. Others include confusion, hallucinations, and thrombocytopenia. Digoxin has a narrow therapeutic window and the elderly are particularly prone to the development of toxicity. Renal dosing should be used with low creatinine clearance. When digoxin is administered there is often a classic slurring of the ST segment in all or most leads of the ECG. This change is not indicative of toxicity. Toxicity can be treated with digoxin immune Fab (Digibind)

21. Mr. Jeremy has chronic atrial fibrillation and is taking warfarin (Coumadin). What is the reason he is on this drug?
- To prevent deep vein thrombosis
 - To prevent blood clots from building up on his own native aortic valve.
 - To prevent blood clots from developing in the atrium due to stasis of blood in a noncontractile chamber. *
 - To reduce the adhesiveness of platelets and prevent a myocardial infarction.

Atrial fibrillation is a condition in which the atria have rapid and uncoordinated electrical stimuli. The result is that the atria do not contract and may just quiver. Stasis of blood can occur and if clots develop and embolize, the result can be a stroke, MI, or peripheral occlusion. To prevent these serious and common sequelae of atrial fibrillation, the person is usually given the anticoagulant warfarin dosed to obtain an INR of 2.0 to 3.0. If the risk of fall and bleeding is too great, other options may be used.

22. Complications of an acute myocardial infarction include:
- Rupture of the septum, papillary muscle or ventricular wall
 - Heart Block and Ventricular Tachycardia/Fibrillation
 - Cardiogenic shock and heart failure
 - All of the above *

Myocardial infarction can result in all of these complications and more (pericarditis, mural thrombus, left ventricular aneurism). Ruptures are most likely to occur 3-7 days

post infarction. Arrhythmias occur in the acute period of time but may also become a persistent problem. Shock can occur acutely and heart failure most often is a chronic problem.

23. Holistic nursing care of the cardiovascular patient is best exemplified by:
- Attention to the patient's expressed concerns along with high quality physical care. *
 - Prompt answering of the call light.
 - Strict visiting hours to allow the patient to rest.
 - Limiting TV and radio to reduce stress.

Meeting the expressed concerns of the patient addresses not only the physical but the social, psychological, and spiritual side of the patient. Other options here do not address this wide array of aspects of the person. Some actually may increase stress and disregard what the person wants and needs in recovery.

Here are a couple of extra ones that I prepared, but they are a bit harder and you may not want to use them.

24. Patients on amiodarone are at high risk for adverse risks that include:
- hyper/hypothyroidism, pulmonary infiltrates, and skin discoloration *
 - renal failure and hyperlipidemia
 - diabetes and asthma.
 - valvular disease and arterial insufficiency.

Amiodarone can increase the risk infiltrates in these organs and therefore baseline and annual thyroids studies, pulmonary function tests, ophthalmic and dermatology exams should be performed.

25. Which of the following drugs would be contraindicated for someone with a potassium level of 5.1?
- Spiroalactone *
 - Hydrochlorothiazide
 - Furosemide (Lasix)
 - Warfarin (Coumadin)

Spiroalactone is a potassium sparing diuretic. Serum potassium will likely rise in someone started on this drug. If the person already has a high potassium level this drug may cause dangerous elevations in potassium.

26. The most life threatening adverse effect of taking a HMG coenzyme A Reductase Inhibitor (Statins) is:
- angioedema

- b. renal failure
- c. myalgia
- d. rhabdomyolysis *

Angioedema is associated with the use of an ACE-I. Statins are metabolized in the liver and more likely to be associated with liver damage. Myalgia is associated with statin use, but only becomes a problem if there is massive breakdown of muscle tissue associated with rhabdomyolysis. If this occurs, renal failure ensues.

27. Which noninvasive diagnostic test will provide clinically useful information regarding the structure and movement of heart valves and the left ventricle.

- a. Echocardiogram *
- b. Left heart catheterization
- c. Thallium Study
- d. CT with Calcium Score

The echocardiogram is an ultrasound of the heart that tells much about the structure and movement of the chambers of the heart and the valves. The left heart catheterization will provide information about this too, but it is invasive and only on the one side of the heart. The thallium study is useful to determine perfusion to the heart muscle. The CT with Calcium score is predictive of coronary lesions.