

# Annotated Written Exam

1. The initial treatment of any patient with symptomatic bradycardia should focus on:
  - a. Support of airway and breathing.
  - b. Preparation for transcutaneous pacing.
  - c. Preparation for synchronized cardioversion.
  - d. Assessment of oxygen saturation and establishing IV access.

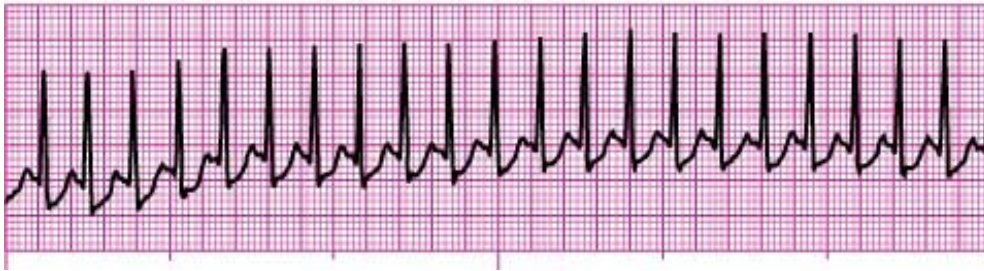
ANS: A

The initial treatment of any patient with symptomatic bradycardia should focus on support of airway and breathing.

PTS: 1 REF: Circulation. 2005. 112:IV-67

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient with symptomatic bradycardia. TOP: Bradycardia Management

2. A 37-year-old woman is complaining of shortness of breath and palpitations. You have placed the patient on O<sub>2</sub> and an IV has been established. Her mental status is rapidly decreasing and she is very pale. Her initial blood pressure was 148/70. It is now 62/38. Breathing is shallow at 8 to 12 breaths/minute. The cardiac monitor shows the following rhythm:



Your best course of action will be to:

- a. Perform CPR and give epinephrine 1 mg IV push.
- b. Perform synchronized cardioversion starting with 50 joules.
- c. Perform CPR for 2 minutes, then defibrillate with 200 joules.
- d. Give sublingual nitroglycerin and then 150 mg of amiodarone.

ANS: B

This patient is clearly unstable (acute altered mental status, hypotension, and shortness of breath). Consider sedation and perform synchronized cardioversion starting with 50 joules or equivalent biphasic energy. Since the patient has a pulse, CPR is not indicated. Epinephrine causes vasoconstriction and increases heart rate. Since the patient is already tachycardic, epinephrine is contraindicated. Nitroglycerin is not indicated because the patient has no complaint of chest discomfort and is severely hypotensive.

PTS: 1 REF: Circulation. 2005. 112:IV-42

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a symptomatic patient with a narrow-QRS tachycardia. TOP:

Electrical Therapy, Tachycardias

3. Atypical symptoms or unusual presentations of acute coronary syndromes are more common in:
- The elderly, women, and diabetic individuals.
  - Men, the elderly, and individuals who have liver disease.
  - Women, diabetics, and individuals who have liver disease.
  - Men and patients with coronary artery disease and hypertension.

ANS: A

Atypical symptoms or unusual presentations of acute coronary syndromes are more common in the elderly, women, and diabetic individuals.

PTS: 1

REF: Circulation. 2005. 112:IV-89

OBJ: Explain “atypical presentation” and its significance in acute coronary syndromes.

TOP: Acute Coronary Syndromes

4. A patient has experienced a cardiopulmonary arrest. The cardiac monitor displays a sinus tachycardia at 110 beats/minute. Appropriate treatment for this patient should include:
- CPR, IV access, epinephrine, and atropine.
  - CPR, defibrillation, IV access, epinephrine, and atropine.
  - CPR, IV access, epinephrine, and a search for the cause of the arrest.
  - CPR, transcutaneous pacing, and a search for the cause of the arrest.

ANS: C

Despite the presence of an organized rhythm on the cardiac monitor, the patient is pulseless. The clinical situation is pulseless electrical activity. Start CPR, insert an IV, give epinephrine, and search for a reversible cause of the arrest. If the patient’s rhythm was slow, the use of atropine would be appropriate. In this case, the patient’s PEA is associated with a tachycardia so atropine is not indicated.

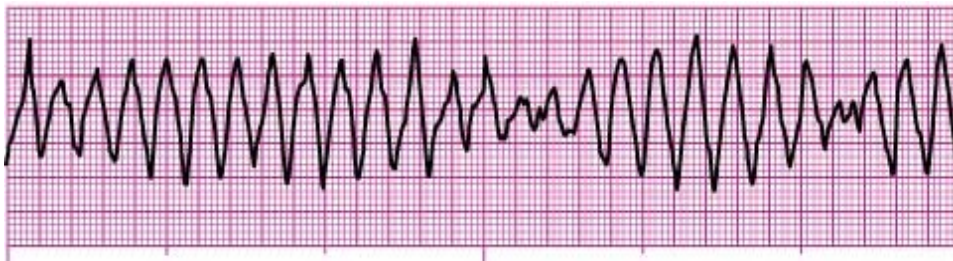
PTS: 1

REF: Circulation. 2005. 112:IV-58

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient in pulseless electrical activity.

TOP: Cardiac Arrest Management

5. A 29-year-old man presents with an acute altered mental status. His blood pressure is 50/P, respirations 14. The cardiac monitor reveals the following:



Your best course of action in this situation will be to:

- Consider sedation and defibrillate immediately.
- Start an IV and give adenosine in a rapid IV push.
- Perform an immediate synchronized cardioversion.

d. Start an IV and give diltiazem IV push over 2 minutes.

ANS: A

The rhythm shown is polymorphic ventricular tachycardia (VT). The patient is unstable (acute altered mental status, hypotension). Consider sedation and defibrillate immediately. Although synchronized cardioversion is an appropriate treatment for unstable patients with a tachycardia, it is used for tachycardias that have a relatively uniform amplitude. Since the amplitude of the waveforms in polymorphic VT varies, defibrillation should be used instead. Adenosine and diltiazem are not indicated. If stable, Magnesium would be the drug of choice.

PTS: 1 REF: Circulation. 2005. 112:IV-71

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a symptomatic patient with an irregular tachycardia. TOP: Tachycardias

6. The 2005 resuscitation guidelines no longer recommend transcutaneous pacing for which of the following rhythms?
- Asystole.
  - Junctional rhythm.
  - Third-degree AV block.
  - Second-degree AV block type II.

ANS: A

Transcutaneous pacing is an appropriate treatment option for any symptomatic bradycardia. It is no longer recommended for asystolic cardiac arrest.

PTS: 1 REF: Circulation. 2005. 112:IV-42

OBJ: Discuss indications for transcutaneous pacing. TOP: Electrical Therapy

7. A 53-year-old woman is unresponsive. BP 50/P, RR 10. The cardiac monitor initially showed a narrow-QRS tachycardia at 220 beats/minute. Oxygen therapy was initiated and an IV established before the patient's collapse. You promptly delivered a synchronized shock. Reassessment reveals the patient is not breathing and has no pulse. The cardiac monitor now reveals ventricular fibrillation. What course of action should you take at this time?
- Place an advanced airway and then begin transcutaneous pacing.
  - Press the "sync" control and deliver another synchronized shock.
  - Immediately perform an unsynchronized cardioversion.
  - Perform CPR for 5 cycles and then defibrillate.

ANS: C

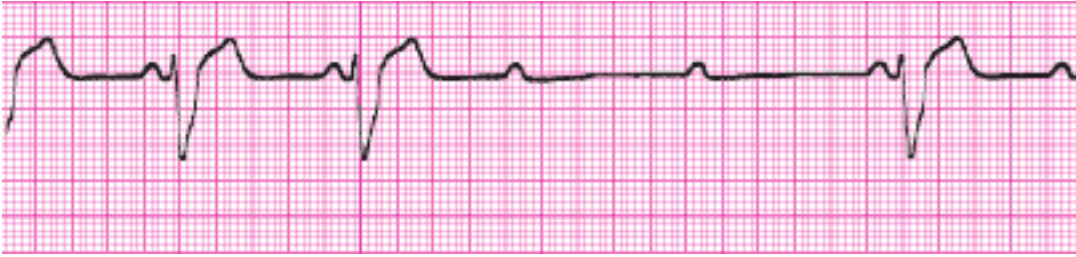
Appropriate care at this time includes immediate defibrillation. As this was a witnessed arrest, 2 minutes, or 5 cycles, of CPR are not necessary initially.

PTS: 1 REF: Circulation. 2005. 112:IV-58

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient in pulseless VT/VF.

TOP: Electrical Therapy, Cardiac Arrest Management

8. A 70-year-old man presents with acute altered mental status and dizziness. Oxygen has been applied and the cardiac monitor reveals the following rhythm:



This rhythm is:

- Junctional rhythm.
- Second-degree AV block type I.
- Second-degree AV block type II.
- Third-degree AV block.

ANS: C

The rhythm shown is a second-degree AV block type II with ST-segment elevation.

PTS: 1 REF: Circulation. 2005. 112:IV-68

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient with symptomatic bradycardia. TOP: Bradycardia Management

9. Based on the patient's signs and symptoms associated with this rhythm, your best course of action will be to:
- Give atropine 1 mg IV every 3 to 5 minutes.
  - Give epinephrine 1 mg IV bolus and reassess.
  - Prepare for immediate transcutaneous pacing.
  - Observe the patient and monitor for signs of deterioration.

ANS: C

Atropine is usually ineffective for wide-QRS bradycardias. Your best course of action will be to prepare for immediate transcutaneous pacing. Although epinephrine can be used in the management of symptomatic bradycardia, it is given as a continuous IV infusion, not as an IV bolus.

PTS: 1 REF: Circulation. 2005. 112:IV-68

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient with a symptomatic bradycardia. TOP: Bradycardia Management

A 78-year-old woman is found unresponsive.

10. From across the room, your first impression of the patient is that she is not moving, you can see no rise and fall of her chest or abdomen, and her skin color is pale. When you arrive at the patient's side, you confirm that she is unresponsive. As you shout for help, your **next** action in this situation should be to:
- Begin chest compressions.
  - Open her airway and check breathing.

- c. Apply the automated external defibrillator.
- d. Prepare the necessary equipment to insert an advanced airway.

ANS: B

After forming a first impression, you should perform a primary survey using the ABCD approach - Airway, Breathing, Circulation, and Defibrillation (if necessary).

PTS: 1 REF: Circulation. 2005. 112:IV-21

OBJ: List the purpose and components of the primary and secondary surveys.

TOP: Oxygenation & Ventilation

11. If no head or neck trauma is suspected, which of the following techniques should healthcare professionals use to open the airway?
- a. Jaw-thrust without head-tilt.
  - b. Head-tilt/neck-lift.
  - c. Head-tilt/chin-lift.
  - d. Tongue-jaw lift.

ANS: C

If no head or neck trauma is suspected, use the head-tilt/chin-lift maneuver to open the airway. If trauma is suspected, the jaw thrust without head-tilt maneuver should be used.

PTS: 1 REF: Circulation. 2005. 112:IV-20

OBJ: Relate mechanism of injury to opening the airway.

TOP: Oxygenation & Ventilation

12. The primary survey reveals the patient is unresponsive and not breathing. A weak pulse is present at a rate of about 70. Your best course of action will be to:
- a. Begin mouth-to-mouth breathing.
  - b. Begin ventilations with a bag-valve-mask.
  - c. Begin cardiopulmonary resuscitations at 30 to 2.
  - d. Begin ventilations after inserting an endotracheal tube.

ANS: B

The patient has experienced a respiratory arrest. Chest compressions are not indicated since the patient has a pulse. Begin ventilating with a bag-valve-mask. Although insertion of an advanced airway is appropriate, it must be preceded by another form of ventilation (such as bag-valve-mask ventilation) while preparations are made to insert the airway.

PTS: 1 REF: Circulation. 2005. 112:IV-51

OBJ: Describe indications for positive-pressure ventilation.

TOP: Oxygenation & Ventilation

13. An oral airway:
- a. Can only be used in spontaneously breathing patients.
  - b. Is usually well tolerated in responsive or semi-responsive patients.
  - c. Is of proper size if it extends from the tip of the nose to the tip of the ear.
  - d. Assists with ventilations by preventing the tongue from blocking the airway.

ANS: D

When properly positioned, an oral airway positions the tongue forward and away from the back of the throat. It may be used to help maintain an open airway in an unresponsive patient who is not intubated, help maintain an open airway in an unresponsive patient with no gag reflex who is being ventilated with a bag-valve-mask or other positive-pressure device, and may be used as a bite block after insertion of an endotracheal tube or orogastric tube. An oral airway may produce vomiting if used in a responsive or semi-responsive patient with a gag reflex. Correct size is determined by selecting an oral airway that extends from the corner of the mouth to tip of the earlobe or the angle of the jaw.

PTS: 1 REF: Circulation. 2005. 112:IV-52

OBJ: Describe the method of correct sizing, insertion technique, and possible complications associated with insertion of an oral and nasal airway

TOP: Oxygenation & Ventilation

14. An oral airway is in place. In this situation, the proper rate for bag-valve-mask ventilation is:
- 8 to 10 ventilations per minute; each ventilation delivered over 1 second.
  - 10 to 12 ventilations per minute; each ventilation delivered over 1 second.
  - 12 to 20 ventilations per minute; each ventilation delivered over 1 1/2 to 2 seconds.
  - 20 to 24 ventilations per minute; each ventilation delivered over 1 1/2 to 2 seconds.

ANS: B

The proper rate for bag-valve-mask ventilation in this situation is 10 to 12 ventilations per minute; each ventilation is delivered over 1 second. After intubation the rate is 8 to 10 per minute.

PTS: 1 REF: Circulation. 2005. 112:IV-51

OBJ: Describe how to ventilate a patient with a bag-valve-mask using one and two rescuers.

TOP: Oxygenation & Ventilation

15. A 62-year-old man is found unresponsive. He is not breathing and has no pulse. Which of the following correctly reflects the priorities of care during cardiac arrest?
- Establishing IV access and drug administration.
  - Defibrillation and drug administration.
  - CPR and establishing IV access.
  - CPR and defibrillation.

ANS: D

Since no drugs used in cardiac arrest have been shown to improve survival to hospital discharge, the priorities of care in a cardiac arrest are CPR and defibrillation.

PTS: 1 REF: Circulation. 2005. 112:IV-57

OBJ: Describe the critical actions necessary in caring for the adult patient in cardiac arrest.

TOP: Cardiac Arrest Management

16. During cardiac arrest:
- Chest compressions should never be interrupted.
  - Chest compressions may be interrupted for up to 1 minute to start an IV and insert an advanced airway.
  - Chest compressions and ventilations should be interrupted every 3 to 5 minutes to permit the members of the resuscitation team to change positions.

- d. Interruptions in chest compressions to analyze the ECG, charge the defibrillator, place an advanced airway, check a pulse, or other procedures must be kept to a minimum.

ANS: D

During cardiac arrest, coronary perfusion declines rapidly if chest compressions are stopped for even a few seconds. When caring for a patient in cardiac arrest, it is *essential* that interruptions to analyze the ECG, charge the defibrillator, place an advanced airway, check a pulse, or other procedures be kept to a minimum.

PTS: 1 REF: Circulation. 2005. 112:IV-59

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient in pulseless VT/VF.

TOP: Cardiac Arrest Management

17. Defibrillation is indicated in the management of:
- Ventricular fibrillation and asystole.
  - Asystole and pulseless electrical activity.
  - Pulseless ventricular tachycardia and ventricular fibrillation.
  - Pulseless ventricular tachycardia and pulseless electrical activity.

ANS: C

Defibrillation is indicated in the management of pulseless ventricular tachycardia and ventricular fibrillation.

PTS: 1 REF: Circulation. 2005. 112:IV-58

OBJ: Explain defibrillation and name three indications for this procedure.

TOP: Electrical Therapy, Cardiac Arrest Management

18. The cardiac monitor reveals the following rhythm.



Which of the following statements is true about this rhythm?

- This rhythm is ventricular fibrillation, a “shockable” rhythm.
- This rhythm is a wide-QRS tachycardia, a “non-shockable” rhythm.
- This rhythm is a narrow-QRS tachycardia, a “non-shockable” rhythm.
- This rhythm is monomorphic ventricular tachycardia, a “shockable” rhythm.

ANS: D

The rhythm shown is monomorphic ventricular tachycardia (VT). Monomorphic VT and ventricular fibrillation are shockable cardiac arrest rhythms.

PTS: 1 REF: Circulation. 2005. 112:IV-59

OBJ: Differentiate “shockable” cardiac arrest rhythms from “non-shockable” cardiac arrest rhythms. TOP: Cardiac Arrest Management

19. When a shockable rhythm is present during cardiac arrest and a biphasic manual defibrillator is available, the initial energy level selected should be:
- 120 joules.
  - 200 joules.
  - 360 joules.
  - The dose recommended by the manufacturer for terminating the rhythm.

ANS: D

When using a biphasic waveform defibrillator to treat pulseless VT/VF, use the energy levels recommended by the manufacturer for the initial and subsequent shocks. If you do not know what the recommended energy levels are, it is reasonable to use 200 J for the first shock. Use an equal or higher dose for the second or subsequent shocks, depending on the capabilities of the device.

PTS: 1 REF: Circulation. 2005. 112:IV-58

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient in pulseless VT/VF.

TOP: Cardiac Arrest Management

20. The preferred site for initial placement of a large IV catheter is the:
- Saphenous vein.
  - Antecubital vein.
  - Subclavian vein.
  - Internal jugular vein.

ANS: B

During circulatory collapse or cardiac arrest, the preferred vascular access site is the largest, most accessible vein that does not require the interruption of resuscitation efforts. If no IV is in place before the arrest, establish IV access using a peripheral vein – preferably the antecubital or external jugular vein.

PTS: 1 REF: Circulation. 2005. 112:IV-57

OBJ: Describe the sites of first choice for cannulation if no IV is in place at the time of cardiac arrest. TOP: Vascular Access and Medications, Cardiac Arrest Management

21. Drugs given during cardiac arrest should be given:
- By continuous IV infusion.
  - By the endotracheal route whenever possible.
  - By IV bolus and followed with a 20 mL flush of IV fluid.
  - By IV bolus over 2 to 3 minutes and followed with a 10 mL flush of IV fluid.

ANS: C

During cardiac arrest, give IV drugs rapidly by bolus injection. Follow each drug with a 20-mL bolus of IV fluid and raise the extremity for 10 to 20 seconds to aid delivery of the drug(s) to the central circulation. If IV or IO access cannot be achieved to give drugs during a cardiac arrest, the endotracheal route can be used to give selected medications. The tracheal route of drug administration is not preferred because multiple studies have shown that giving resuscitation drugs endotracheally results in lower blood concentrations than the same dose given IV.

PTS: 1 REF: Circulation. 2005. 112:IV-57  
OBJ: Discuss medication delivery during cardiac arrest.  
TOP: Vascular Access and Medications, Cardiac Arrest Management

22. Attempts to establish a peripheral IV have been unsuccessful. Your best course of action at this time will be to:
- Insert a central line.
  - Attempt intraosseous access.
  - Discontinue resuscitation efforts.
  - Continue peripheral IV attempts until successful.

ANS: B

If peripheral IV access is unsuccessful during cardiac arrest, consider an intraosseous infusion before considering placement of a central line.

PTS: 1 REF: Circulation. 2005. 112:IV-57  
OBJ: Describe the use of the intraosseous and endotracheal routes as alternate routes of medication delivery in cardiac arrest.  
TOP: Vascular Access and Medications, Cardiac Arrest Management

23. Vasopressors that may be given during a cardiac arrest include:
- Atropine and epinephrine.
  - Vasopressin and atropine.
  - Amiodarone and lidocaine.
  - Epinephrine and vasopressin.

ANS: D

Epinephrine and vasopressin are vasopressors. Amiodarone and lidocaine are antidysrhythmics. Atropine is a parasympatholytic.

PTS: 1 REF: Circulation. 2005. 112:IV-59  
OBJ: Identify the mechanism of action, indications, dosage, and precautions for vasopressin and epinephrine.  
TOP: Cardiac Arrest Management

24. In addition to oxygen, which of the following drugs can be given via the endotracheal route during an adult cardiac arrest?
- Sodium bicarbonate, atropine, lidocaine, and amiodarone.
  - Naloxone, atropine, vasopressin, epinephrine, and lidocaine.
  - Amiodarone, epinephrine, sodium bicarbonate, and naloxone.
  - Lidocaine, adenosine, vasopressin, naloxone, and amiodarone.

ANS: B

Although IV or IO administration of drugs is preferred, some drugs can be given endotracheally if vascular access is delayed or cannot be achieved. Drugs that can be given via the endotracheal route during an adult cardiac arrest can be remembered by using the memory aid “NAVEL” - Naloxone, atropine, vasopressin, epinephrine, and lidocaine.

PTS: 1 REF: Circulation. 2005. 112:IV-57

OBJ: Describe the use of the intraosseous and endotracheal routes as alternate routes of medication delivery in cardiac arrest.

TOP: Vascular Access and Medications, Cardiac Arrest Management

25. Which of the following statements is true about giving antiarrhythmics during cardiac arrest?
- An antiarrhythmic should be the first drug given in every cardiac arrest.
  - Antiarrhythmics are indicated only if an organized rhythm is seen on the cardiac monitor.
  - An antiarrhythmic is recommended for cardiac arrests involving non-shockable rhythms because studies clearly show that this action increases survival to hospital discharge.
  - An antiarrhythmic can be considered, but there is no evidence that any antiarrhythmic drug given routinely during human cardiac arrest increases survival to hospital discharge.

ANS: D

An antiarrhythmic can be considered during cardiac arrest, but there is no evidence that any antiarrhythmic drug given routinely during human cardiac arrest increases survival to hospital discharge.

PTS: 1 REF: Circulation. 2005. 112:IV-62

OBJ: Identify the mechanism of action, indications, dosage, and precautions for amiodarone, lidocaine, and magnesium.

TOP: Vascular Access and Medications, Cardiac Arrest Management

26. Vasopressin:
- Should be given every 3 to 5 minutes during cardiac arrest.
  - Should be given as a continuous IV infusion at a rate of 40 U/hr in cardiac arrest.
  - May replace either the first or second dose of epinephrine in the treatment of cardiac arrest.
  - Can be used in cardiac arrest due to pulseless ventricular tachycardia or ventricular fibrillation, but not in cardiac arrest due to asystole or pulseless electrical activity.

ANS: C

One dose of vasopressin 40 U IV/IO may replace either the first or second dose of epinephrine in the treatment of pulseless arrest. The 2005 resuscitation guidelines provide conflicting information about the use of vasopressin in cardiac arrest due to pulseless electrical activity. “If the rhythm check confirms asystole or PEA, resume CPR immediately. A vasopressor (epinephrine or vasopressin) may be administered at this time.” 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, Part 7.2: Management of Pulseless Arrest. Circulation. 2005. 112(suppl IV):IV-61.

“Providers may consider vasopressin for treatment of asystole, but there is insufficient evidence to recommend for or against its use in PEA. Further studies are required.” 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, Part 7.2: Management of Pulseless Arrest. *Circulation*. 2005; 112(suppl IV):IV-62.

PTS: 1 REF: *Circulation*. 2005. 112:IV-61

OBJ: Identify the mechanism of action, indications, dosage, and precautions for vasopressin.

TOP: Vascular Access and Medications, Cardiac Arrest Management

27. Amiodarone:

- a. Is given as a loading dose of 150 mg IV bolus over 10 minutes in cardiac arrest.
- b. Should be given only if there is a return of spontaneous circulation after cardiac arrest.
- c. Should be given IV or endotracheally in cardiac arrest due to pulseless electrical activity.
- d. Is given as an initial IV dose of 300 mg and one repeat dose of 150 mg in cardiac arrest due to pulseless ventricular tachycardia or ventricular fibrillation.

ANS: D

Amiodarone is given as an initial IV dose of 300 mg and one repeat dose of 150 mg in cardiac arrest due to pulseless ventricular tachycardia or ventricular fibrillation.

PTS: 1 REF: *Circulation*. 2005. 112:IV-62

OBJ: Identify the mechanism of action, indications, dosage, and precautions for amiodarone.

TOP: Vascular Access and Medications, Cardiac Arrest Management

28. Which of the following statements is true about patients who present with a possible acute coronary syndrome (ACS)?

- a. VF or pulseless VT is most likely to develop 48 hours after the onset of symptoms.
- b. Prophylactic lidocaine should be given to all patients with a possible ACS to reduce the incidence of VF.
- c. A 12-lead ECG should be obtained within 10 minutes of patient contact (prehospital) or 10 minutes of patient arrival in the Emergency Department.
- d. Patients who are most likely to benefit from reperfusion therapy are those who show ST-segment depression or nonspecific ST- or T-wave changes on their ECG.

ANS: C

A 12-lead ECG should be obtained within 10 minutes of patient contact (prehospital) or 10 minutes of patient arrival in the Emergency Department. Primary ventricular fibrillation is VF that occurs during the acute phase of a myocardial infarction. The incidence of VF is highest during the first 4 hours after onset of symptoms and remains an important contributing factor to death in the first 24 hours. For many years, PVCs observed in patients experiencing an acute MI were thought to be “warning” dysrhythmias of impending VF, particularly multiform PVCs, R-on-T PVCs, couplets, frequent (> 6/min) PVCs. It is considered prudent clinical practice to observe these premature beats closely, consider the reason for their occurrence (such as hypoxemia, acid-base disturbance, electrolyte imbalance, or heart failure), and correct the underlying cause. Routine administration of lidocaine to prevent VF is no longer recommended. Reperfusion therapy is the mainstay of treatment for ST-elevation MI (STEMI). Since STEMI is usually the result of a blocked coronary artery, the blockage may be removed by giving fibrinolytics (pharmacologic reperfusion) or primary percutaneous coronary intervention (PCI) (mechanical reperfusion).

PTS: 1 REF: Circulation. 2005. 112:IV-89, 93, 102  
OBJ: Describe the initial assessment and immediate general treatment of acute coronary syndromes.  
TOP: Acute Coronary Syndromes

29. Which of the following statements about lidocaine dosing in pulseless VT/VF is correct?
- Lidocaine is given as a continuous IV infusion of 2 to 10 mcg/min.
  - Lidocaine is given as a continuous IV infusion of 10 to 20 mcg/kg/min.
  - The initial dose is 1 mg IV push which may be repeated twice to a maximum dose of 3 mg.
  - The initial dose is 1 to 1.5 mg/kg IV push; repeat doses of 0.5 to 0.75 mg/kg IV push may be given at 5- to 10-minute intervals, to a maximum dose of 3 mg/kg.

ANS: D

Although amiodarone is the preferred antiarrhythmic in cardiac arrest due to pulseless VT/VF, lidocaine may be considered if amiodarone is not available. The initial dose is 1 to 1.5 mg/kg IV push. Repeat doses of 0.5 to 0.75 mg/kg IV push may be given at 5- to 10-minute intervals, to a maximum dose of 3 mg/kg. If there is a return of spontaneous circulation, consider a lidocaine infusion of 1 to 4 mg/min. This should be reduced after 24 hours (to 1 to 2 mg/min) or in the setting of altered metabolism (congestive heart failure, hepatic dysfunction, acute MI with hypotension or shock, patients > 70 years, poor peripheral perfusion) and as guided by blood level monitoring.

PTS: 1 REF: Circulation. 2005. 112:IV-62  
OBJ: Identify the mechanism of action, indications, dosage, and precautions for lidocaine.  
TOP: Vascular Access and Medications, Cardiac Arrest Management

30. Which of the following statements is true of right ventricular infarction (RVI)?
- Right ventricular infarction or ischemia usually occurs in patients with an anterior wall infarction.
  - Typical signs and symptoms of RVI include hypertension, jugular venous distention, and bilateral rales/crackles.
  - Nitrates, diuretics, and other vasodilators should be avoided in RVI because severe hypotension may result.
  - Caution should be used when administering IV fluids because the development of pulmonary edema is increased in patients with RVI.

ANS: C

Suspect a right ventricular infarction (RVI) when ECG changes suggesting an *inferior* infarction (ST-segment elevation in leads II, III, and/or aVF) are seen. About 50% of patients with inferior infarction have some involvement of the right ventricle. RVI can result in hypotension (of varying degrees), jugular venous distention, and absence of pulmonary edema (clear lung sounds). These signs are considered the clinical triad of RVI. This triad is present in only about 10% to 15% of patients with RVI. Vasodilators reduce preload. This reduction in preload, while usually beneficial, can be undesirable in the setting of RVI and may cause profound hypotension. Caution must be exercised when giving nitroglycerin and morphine to patients experiencing RVI. If hypotension does occur, it will bring with it the serious consequence of a decrease in coronary artery perfusion. If the decision is made to give vasodilators, establish an IV before giving a vasodilator. This should be routinely done for all patients; however, it is particularly important in RVI. If the patient's lung sounds are clear, give an IV fluid challenge of 250 to 500 mL (usually with normal saline) and reassess the patient's response. This approach attempts to increase preload and offset the anticipated decrease in preload. In the setting of RVI, blood does not back up from the left ventricle into the lungs, so pulmonary edema is not expected.

PTS: 1 REF: Circulation. 2005. 112:IV-100

OBJ: Explain the clinical and ECG features of right ventricular infarction.

TOP: Acute Coronary Syndromes

31. Atropine:

- a. Is given in doses of 1 mg to a maximum of 3 mg in asystole or slow PEA.
- b. Is used to slow the ventricular rate in narrow-QRS tachycardias.
- c. Is given in doses of 1 to 1.5 mg/kg for symptomatic bradycardia.
- d. Is effective for AV blocks below the level of the AV node.

ANS: A

Atropine is a first-line drug for symptomatic narrow-QRS bradycardia. It is also indicated in the treatment of asystole (after epinephrine) and slow pulseless electrical activity (after epinephrine). When given for symptomatic bradycardia, the dose of atropine is 0.5 mg IV push every 3 to 5 min to a total dose of 3.0 mg. In asystole or slow PEA, the IV/IO dose of atropine is 1.0 mg every 3 to 5 minutes to a total dose of 3 mg. Atropine is useful for treating AV blocks at the level of the AV node. Use transcutaneous pacing without delay for symptomatic wide-QRS bradycardias.

PTS: 1 REF: Circulation. 2005. 112:IV-61, 62, 68

OBJ: Identify the mechanism of action, indications, dosage, and precautions for atropine.

TOP: Bradycardia Management, Cardiac Arrest Management

32. Which of the following statements is true about ventilation with a bag-valve-mask?

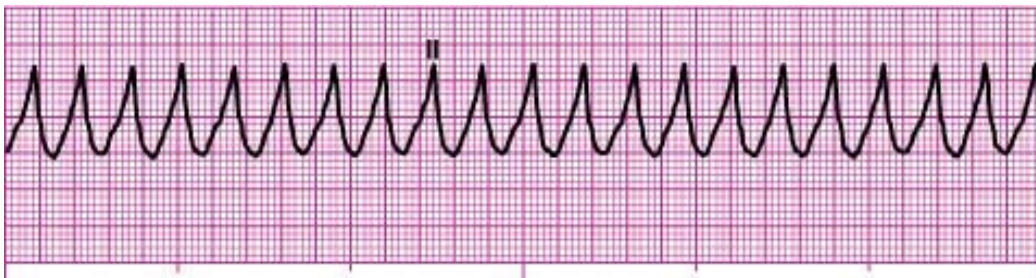
- a. A bag-valve-mask device should be equipped with a pop-off (pressure release) valve to overcome increased air resistance in cardiac arrest patients.
- b. When an advanced airway is in place, ventilations with a bag-valve-mask must be synchronized with chest compressions during cardiac arrest.
- c. Bag-valve-mask ventilation can produce gastric distention that can lead to vomiting and subsequent aspiration.
- d. Bag-valve-mask ventilation can only be used for patients who are not breathing.

ANS: C

Bag-valve-mask ventilation can be used with the spontaneously breathing patient as well as the nonbreathing patient. A bag-valve-mask used during a cardiac arrest should have either no pop-off valve (pressure-release valve) or a pop-off valve that can be disabled during resuscitation. During cardiac arrest, if the patient does not have an advanced airway in place, deliver cycles of 30 compressions and 2 breaths. Deliver the breaths during pauses in compressions. Deliver each breath over 1 second with just enough force to cause gentle chest rise. Delivering breaths that are too large or too forceful are unnecessary and may cause gastric distention that can lead to vomiting and subsequent aspiration. Once an advanced airway (endotracheal tube, Combitube, or laryngeal mask airway) is in place during 2-person CPR, ventilate at a rate of 8 to 10 breaths per minute without pausing chest compressions for delivery of ventilations.

PTS: 1 REF: Circulation. 2005. 112:IV-23, 51  
OBJ: Describe how to ventilate a patient with a bag-valve-mask using one and two rescuers. Acute Coronary Syndromes  
TOP: Oxygenation & Ventilation

33. A 72-year-old man was complaining of severe substernal chest pain. His level of consciousness has steadily decreased. He now responds by moaning when his name is spoken. His skin is pale and clammy. BP 68/40, R 12. His pulse is weak and fast. The cardiac monitor reveals the rhythm below.



Your best course of action in this situation will be to:

- Start an IV and give a 300 mg dose of amiodarone.
- Perform synchronized cardioversion with 100 joules.
- Begin CPR and then defibrillate with 360 joules after two minutes.
- Ask the patient to bear down; if unsuccessful, give adenosine IV push.

ANS: B

The rhythm shown is monomorphic ventricular tachycardia. The patient is clearly unstable as evidenced by his acute altered mental status and severe hypotension. Consider sedation and perform synchronized cardioversion with 100 joules or equivalent biphasic energy.

PTS: 1 REF: Circulation. 2005. 112:IV-42  
OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a symptomatic patient with a wide-QRS tachycardia. TOP: Electrical Therapy, Tachycardias

34. Which of the following statements is **incorrect**?
- When pulseless VT/VF is present, give 1 shock, recheck the patient's ECG rhythm and pulse, and then resume CPR.
  - In the case of a witnessed arrest due to pulseless VT/VF, defibrillation should be performed immediately if a defibrillator is available.

- c. During cardiac arrest, rhythm checks should be brief, and pulse checks should generally be performed only if an organized rhythm is seen on the cardiac monitor.
- d. When pulseless VT/VF is present, the rescuer providing chest compressions should be prepared to resume CPR, beginning with chest compressions, as soon as a shock is delivered.

ANS: A

When pulseless VT/VF is present, defibrillation is indicated. When the team leader indicates it is time to deliver a shock, all team members with the exception of the person performing chest compressions should immediately clear the patient. The airway team member must make sure that oxygen is not flowing near the patient's chest. Once the defibrillator is charged, the chest compressor should clear the patient, and a shock should be delivered immediately to the patient. In this way, chest compressions are interrupted for the least amount of time possible during the resuscitation effort. After the shock is delivered, immediately resume CPR, starting with chest compressions. Perform 5 cycles of CPR (about 2 minutes), and then recheck the patient's rhythm. A pulse check is generally only performed if an organized rhythm is seen on the cardiac monitor.

PTS: 1 REF: Circulation. 2005. 112:IV-36

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient in pulseless VT/VF.

TOP: Electrical Therapy, Cardiac Arrest Management

35. Verapamil:

- a. Is the drug of choice for patients with atrial fibrillation or atrial flutter associated with known pre-excitation (Wolff-Parkinson-White [WPW]) syndrome.
- b. Should be given *only* to patients with narrow-QRS tachycardia or arrhythmias known with certainty to be of supraventricular origin.
- c. Can be safely given to patients with impaired ventricular function or heart failure.
- d. Is given rapidly as a 2.5 to 5 mg IV bolus (over 1 to 3 seconds).

ANS: B

Verapamil is indicated in the management of stable narrow-QRS tachycardia due to reentry if the rhythm persists despite vagal maneuvers or adenosine, stable narrow-QRS tachycardia due to automaticity (junctional, ectopic atrial, multifocal atrial tachycardia) if the rhythm persists despite vagal maneuvers or adenosine, and to control the ventricular rate in patients with atrial fibrillation or atrial flutter. It should **not** be given to patients with atrial fibrillation or atrial flutter associated with known preexcitation (WPW) syndrome. The initial dose of verapamil is 2.5 to 5.0 mg given slow IV push over 2 minutes (give over 3 to 4 minutes in the elderly or when BP is within the lower range of normal). Because verapamil decreases myocardial contractility, it is contraindicated in patients who have severe heart failure.

PTS: 1 REF: Circulation. 2005. 112:IV-72

OBJ: Identify the mechanism of action, indications, dosage, and precautions for verapamil.

TOP: Vascular Access and Medications, Tachycardias

36. Local complications common to all intravenous techniques include:

- a. Sepsis.
- b. Air embolism.
- c. Hematoma formation.

d. Catheter-fragment embolism.

ANS: C

Local complications of IV therapy are most often seen at or near the IV insertion site and are more common than systemic complications. Some local complications can lead to more serious systemic complications. Local complications include the following:

Pain and irritation

Hematoma formation

Infiltration and extravasation

Thrombosis and thrombophlebitis

Venous spasm

Vessel collapse

Inadvertent arterial puncture

Cellulitis

Nerve, tendon, ligament, and/or limb damage

PTS: 1

REF: N/A

OBJ: List four local complications common to all IV techniques.

TOP: Vascular Access and Medications

37. A 62-year-old man is presenting with signs and symptoms suggesting a stroke. Realizing that the benefits of IV or intra-arterial fibrinolytics are time-dependent, which of the following is the **most** important question that you should ask this patient, family, and/or bystanders?
- “When did your symptoms begin?”
  - “When did you last see a physician?”
  - “Do you have a history of hypertension?”
  - “What were you doing when your symptoms began?”

ANS: A

Currently, the window of opportunity to use IV rtPA to treat ischemic stroke patients is three hours. The window for intra-arterial fibrinolytics is about six hours. The time from onset of stroke symptoms until treatment is a key factor for success of any therapy. The earlier the treatment for stroke, the more favorable the results are likely to be. Blood flow needs to be restored to the affected area as quickly as possible.

PTS: 1

REF: Circulation. 2005. 112:IV-111

OBJ: Discuss why stroke must be treated within the early hours of symptom onset.

TOP: Stroke

38. After witnessing the sudden cardiac arrest of a 48-year-old man, you delivered a shock that resulted in a sinus tachycardia on the cardiac monitor. A strong pulse is present. An IV is in place. No medications have been given. Which of the following statements is correct?
- Administration of an antiarrhythmic may be considered, but is not required.
  - A 150 mg IV bolus of lidocaine must be given to prevent the recurrence of VF.
  - A 40 unit IV bolus of vasopressin must be given to prevent the recurrence of VF.
  - A 300 mg IV bolus of amiodarone must be given to prevent the recurrence of VF.

ANS: A

There is insufficient evidence to recommend for or against prophylactic administration of antiarrhythmic drugs to patients who have survived cardiac arrest from any cause.

PTS: 1 REF: Circulation. 2005. 112:IV-86  
OBJ: Identify the immediate goals of postresuscitation care.  
TOP: Postresuscitation Support

39. Beta-blockers:
- Increase myocardial oxygen consumption.
  - Increase the force and velocity of myocardial contraction.
  - Are contraindicated for patients experiencing an acute coronary syndrome.
  - Should be used with caution in patients with pulmonary disease or congestive heart failure.

ANS: D PTS: 1 REF: Circulation. 2005. 112:IV-72  
OBJ: Identify the mechanism of action, indications, dosage, and precautions for beta-blockers.  
TOP: Tachycardias

40. In the management of a symptomatic, narrow-QRS bradycardia, if the maximum dose of atropine had been given and a pacemaker was not immediately available, your **next** course of action would include:
- Dopamine infusion, 2 to 10 mcg/kg/min.
  - Amiodarone 150 mg IV over 10 minutes.
  - Epinephrine 1 mg IV bolus followed by a 20-mL saline flush.
  - Lidocaine 1 to 1.5 mg/kg IV bolus followed by a 10-mL saline flush.

ANS: A PTS: 1 REF: Circulation. 2005. 112:IV-70

The bradycardia algorithm lists the dose as 2-10 mcg/kg/min whereas other sources in the AHA guidelines list the dose as 2-20 mcg/kg/min. The other option would be epinephrine but at 2-10 mcg/min.

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a patient with a symptomatic bradycardia. TOP: Bradycardia Management

41. Administration of nitroglycerin should be **avoided** in all of the following situations EXCEPT:
- Congestive heart failure of any cause.
  - Hypotensive patient (systolic blood pressure less than 90 mm Hg).
  - Heart rate of less than 50 beats/minute or more than 100 beats/minute.
  - Patients who have received a medication for erectile dysfunction within the last 24 hours (longer for some preparations).

ANS: A PTS: 1 REF: Circulation. 2005. 112:IV-80, 81, 91, 98

The only choice listed that is not a contraindication for nitro is CHF. By decreasing preload, you will often get the two sides of the heart pumping in a less pulmonary filling process.

OBJ: Identify the mechanism of action, indications, dosage, and precautions for nitroglycerin.  
TOP: Acute Coronary Syndromes, Vascular Access and Medications

42. Which of the following statements regarding safety precautions during defibrillation or synchronized cardioversion is **NOT TRUE**?
- To reduce the risk of fire, make sure that oxygen does not flow across the patient's chest during defibrillation attempts.
  - Ultrasound gel is acceptable for use when using handheld paddles for defibrillation or synchronized cardioversion.
  - The use of multi-purpose ("combo") defibrillation pads instead of handheld paddles may be the best way to minimize the risk of sparks occurring during defibrillation.
  - If handheld paddles are used, gel pads are preferable to electrode pastes and gels because the pastes and gels can spread between the paddles, creating the potential for a spark.

ANS: B

PTS: 1

REF: Circulation. 2005. 112:IV-42

Ultrasound gel is not an acceptable substitute.

OBJ: Describe the procedure for defibrillation and synchronized cardioversion.

TOP: Electrical Therapy

43. An 89-year-old man is complaining of chest discomfort and a "racing heart." He rates his discomfort a "4" on a 0 to 10 scale. He states his symptoms began while playing a card game with friends. He had a myocardial infarction 15 years ago and a coronary artery bypass graft 5 years ago. His blood pressure is 140/90, respiratory rate 16. Breath sounds are clear. You have placed the patient on oxygen and started an IV. The cardiac monitor reveals the following rhythm:



You should:

- Give magnesium sulfate 1 to 2 g IV over 10 minutes.
- Sedate the patient and then defibrillate with 360 joules.
- Give a 2.5 to 5 mg IV bolus of verapamil over 3 minutes.
- Give adenosine if you believe the rhythm is SVT, or amiodarone if you think it is more likely ventricular tachycardia.

ANS: D

The rhythm shown appears to be a wide-QRS tachycardia. Give adenosine if you believe the rhythm is SVT, or amiodarone if you think it is more likely ventricular tachycardia. Verapamil is contraindicated in the treatment of a wide-QRS tachycardia unless it is *known with certainty* to be supraventricular in origin. Defibrillation would be inappropriate.

PTS: 1 REF: Circulation. 2005. 112:IV-72

OBJ: Given a patient situation, discuss the initial management (including mechanical, pharmacological, and electrical therapy where applicable) of a symptomatic patient with a wide-QRS tachycardia. TOP: Tachycardias

44. If it is necessary to defibrillate or perform synchronized cardioversion for a patient who has an implanted medical device (pacemaker or cardioverter-defibrillator), handheld paddles or self-adhesive pads should be placed:
- At least one inch from the device.
  - Directly over the implanted device.
  - At least five inches from the device.
  - Synchronized cardioversion is contraindicated in these patients.

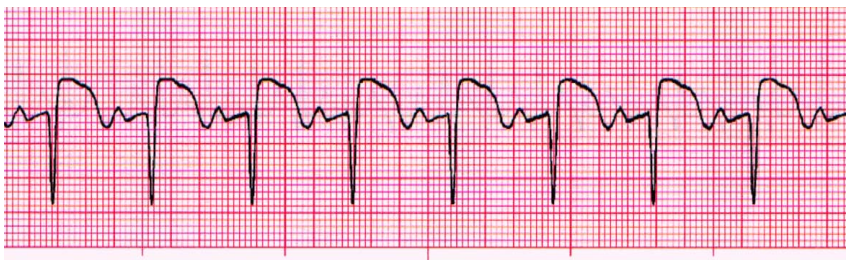
ANS: A

When defibrillating (or cardioverting) a patient with a permanent (implanted) pacemaker or implantable cardioverter-defibrillator (ICD), be careful not to place the defibrillator paddles or combination pads directly over the device. Place defibrillator paddles or combination pads at least one inch (2.5 cm) from the pulse generator (bulge under the patient's skin). If the device is located in the patient's left pectoral area, standard sternum-apex paddle/pad placement for defibrillation is acceptable. If the device is located in the right pectoral area, anterior-posterior paddle/pad placement can be used. Because some of the defibrillation current flows down the pacemaker leads, a patient who has a permanent pacemaker or ICD should have the device checked to ensure proper function after defibrillation.

PTS: 1 REF: Circulation. 2005. 112:IV-39

OBJ: Explain the precautions that should be taken when defibrillating a patient with a permanent pacemaker or implantable cardioverter-defibrillator. TOP: Electrical Therapy

45. A 65-year-old man is complaining of a sudden onset of chest pain. He is awake, alert, and diaphoretic. Questions asked of the patient thus far reveal a possible acute coronary syndrome. The patient states that his symptoms began 45 minutes ago while cleaning his garage. He denies nausea and has not vomited. The patient states that his discomfort is located in the center of his chest and radiates to his jaw. He rates the discomfort a "10" on a scale of 0 to 10. His blood pressure is 130/50, respirations 24. The cardiac monitor reveals the following rhythm (lead II).



This rhythm is:

- a. Wide-QRS tachycardia.
- b. Second-degree AV block type I.
- c. Junctional rhythm with ST-segment elevation.
- d. Sinus rhythm with ST-segment elevation and first-degree AV block.

ANS: C

The rhythm shown is a sinus rhythm with ST-segment elevation and first-degree AV block.

PTS: 1 REF: Circulation. 2005. 112:IV-91

OBJ: Identify the ECG changes associated with myocardial ischemia, injury, and infarction.

TOP: Rhythm Recognition, Acute Coronary Syndromes

46. ST-segment elevation is considered significant if it is:
- a. More than 1/2 mm in at least two leads.
  - b. More than 1 mm in at least two contiguous leads.
  - c. More than 2 mm in at least two leads.
  - d. More than 5 mm in at least two contiguous leads.

ANS: B

ST-segment elevation is considered significant when it is >1 mm in two or more contiguous leads. Some cardiologists use a more stringent requirement for ST-segment elevation. In this alternate means of infarct recognition, at least 2 mm of ST-segment elevation is required in the chest leads before infarction is suspected. Each method has its advantage: The 1 mm threshold for ST-segment elevation favors sensitivity, and the 2 mm criteria favors specificity. Sensitivity refers to a test's ability to identify true disease. Specificity refers to a test that is correctly negative in the absence of disease. A test with high specificity has few false-positives.

PTS: 1 REF: Circulation. 2005. 112:IV-91, 93, 98

OBJ: Explain the ECG criteria for significant ST-segment changes.

TOP: Acute Coronary Syndromes

47. When the patient's 12-lead ECG is reviewed, the results should be used to classify the patient into one of three groups. Which of the following correctly reflects these categories?
- a. ST-segment elevation, normal ECG, Q waves.
  - b. Q waves, ST-segment depression, inconclusive ECG.
  - c. ST-segment depression, normal ECG, inconclusive ECG.
  - d. ST-segment elevation, ST-segment depression, normal/nondiagnostic ECG.

ANS: D

The patient's initial 12-lead ECG should be reviewed and the patient classified into one of three categories: ST-segment elevation, ST-segment depression, normal/nondiagnostic ECG.

PTS: 1 REF: Circulation. 2005. 112:IV-91, 93, 98

OBJ: Describe the initial management of a patient experiencing ST-elevation MI, non-ST-elevation MI, and unstable angina.

TOP: Acute Coronary Syndromes

48. Oxygen has been applied and an IV is in place. The patient's 12-lead ECG reveals ST-segment elevation in leads II, III, and aVF. Which of the following statements is correct?
- a. Leads II, III, and aVF view the inferior wall of the left ventricle. Since an inferior

myocardial infarction (MI) is suspected, right chest leads should be quickly used to rule out right ventricular infarction before giving medications for pain relief.

- b. Leads II, III, and aVF view the anterior wall of the left ventricle. Since this patient is at extreme risk for congestive heart failure and cardiogenic shock, furosemide should be given without delay.
- c. Since relief of pain is a priority in acute coronary syndrome patients, nitroglycerin and morphine should be given without further delay.
- d. The patient's 12-lead results are inconclusive. Additional testing is needed before treatment is begun.

ANS: A

Leads II, III, and aVF view the inferior wall of the left ventricle. About 50% of patients with inferior infarction have some involvement of the right ventricle. Since an inferior myocardial infarction (MI) is suspected, right chest leads should be quickly used to rule out right ventricular infarction before giving medications for pain relief. Morphine and nitroglycerin are vasodilators, and thus they reduce preload. This reduction in preload, while usually beneficial, can be undesirable in the setting of RVI and may cause profound hypotension. Therefore caution must be exercised when giving nitroglycerin and morphine to patients experiencing RVI.

PTS: 1 REF: Circulation. 2005. 112:IV-93, 98, 100

OBJ: Identify the ECG leads that view the anterior wall, inferior wall, lateral wall, and septum.

TOP: Acute Coronary Syndromes

49. A patient has been successfully resuscitated from a cardiac arrest. The initial rhythm was monomorphic VT, which changed to VF. The patient's vital signs are now stable, and a sinus rhythm is present on the monitor. The patient was given epinephrine and lidocaine IV bolus during the arrest. The 2005 resuscitation guidelines indicate that it may be reasonable to continue an infusion of an antiarrhythmic associated with a return of spontaneous circulation. With this in mind, which of the following statements is correct?
- a. Begin an infusion of epinephrine.
  - b. Begin an infusion of lidocaine at 1 to 4 mg/min.
  - c. Give an IV bolus of amiodarone and then begin a continuous infusion.
  - d. Give additional IV bolus doses of lidocaine until the maximum dose is reached, then begin a lidocaine infusion.

ANS: B

PTS: 1

REF: Circulation. 2005. 112:IV-86, 103

The same antidysrhythmic that was used to convert the rhythm should be used as an infusion. Multiple antidysrhythmics can actually cause dysrhythmias. Continuous boluses of lidocaine can increase the likelihood of lidocaine toxicity.

OBJ: Identify the immediate goals of postresuscitation care.

TOP: Postresuscitation Support

50. A 56-year-old woman presents with a sudden onset of chest discomfort that has been present for about 1 hour. The patient describes her discomfort as a "squeezing" sensation in the middle of her chest. She rates her discomfort an 8 on a 0 to 10 scale. Her blood pressure is 126/72, respirations 14. Oxygen has been applied, an IV has been started, and the cardiac monitor reveals the rhythm below.



Immediate management of this patient should include:

- a. Aspirin, nitroglycerin, and morphine.
- b. Vagal maneuvers and adenosine rapid IV push.
- c. Vagal maneuvers and an amiodarone IV infusion.
- d. Nitroglycerin, morphine, lidocaine or amiodarone, and aspirin.

ANS: A

Antiarrhythmics such as lidocaine and amiodarone should not be used to treat the ventricular ectopy seen on the patient's cardiac monitor. Treat the cause of the premature ventricular complexes. Give 160 to 325 mg of non-enteric aspirin as soon as possible after symptom onset, if there are no contraindications. Nitroglycerin relaxes vascular smooth muscle, including dilation of the coronary arteries (particularly in the area of plaque disruption). It also decreases myocardial oxygen consumption. Before giving nitroglycerin, make sure an IV is in place, the patient's systolic blood pressure is >90 mm Hg, the patient's heart rate is >50 and <100 beats/min, there are no signs of right ventricular infarction, and the patient has not used Viagra, Cialis, or similar medication in the previous 24 to 48 hours. Morphine is the drug of choice to relieve pain associated with acute coronary syndromes. It decreases anxiety, pain, and myocardial oxygen requirements. Vagal maneuvers are used to slow the heart rate in a patient who has a narrow-QRS tachycardia. They are not indicated in this situation.

PTS: 1 REF: Circulation. 2005. 112:IV-91

OBJ: Describe the initial management of a patient experiencing ST-elevation MI, non-ST-elevation MI, and unstable angina. TOP: Acute Coronary Syndromes