

15 Item ACLS Drill Answers and Rationale

1. To confirm proper placement of tracheal tube through 5-point auscultation, which of the following observations are appropriate? Check all that apply.

- a. check breath sounds in the left and right lateral chest and lung bases
- b. auscultate breath sounds in the left and right anterior sides of the chest
- c. listen for gastric bubbling noises front the epigastrium
- d. ensure equal and adequate chest expansion bilaterally

The correct answer is all choices. The rescuer should perform 5 point auscultation during hand ventilation as follows: “as the bag is squeezed, listen over the epigastrium and observe the chest wall for movement. If you hear stomach gurgling and see no chest wall expansion, you have intubated the esophagus. Deliver no further ventilations. Remove the tracheal tube at once. Reattempt intubation. If the chest wall rises appropriately and stomach gurgling is not heard, listen to the lung fields: left and right anterior, left and right midaxillary, and once again over the stomach.

2. Which of the following is true about an oropharyngeal airway?

- a. it eliminates the need to position the head of the unconscious patient
- b. it eliminates the possibility of an upper airway obstruction
- c. it is of no value once a tracheal tube is inserted
- d. it may stimulate vomiting or laryngospasm if inserted in the semiconscious patient

The correct answer is D. An oropharyngeal airway may stimulate vomiting or laryngospasm in the semiconscious patient. A semiconscious patient may maintain an intact gag reflex, so insertion of the airway can cause vomiting or laryngospasm. Use of an oropharyngeal airway is recommended to help hold the tongue from the back of the pharynx in an unconscious victim. Answer A is incorrect because you must still maintain proper head positioning in an unconscious patient even when an oropharyngeal airway is in place. Answer B is incorrect because incomplete upper airway obstruction can occur despite an oropharyngeal airway. Monitor the victim closely. Answer C is incorrect because oropharyngeal airway help prevent intubated patients from biting down on the tracheal tube.

3. Which of the following is an indication for tracheal intubation?

- a. difficulty encountered by qualified rescuers in ventilating an apneic patient with a bag-mask device
- b. a respiratory rate of less than 20 breaths per minute in a patient with severe chest pain
- c. presence of premature ventricular contractions
- d. to provide airway protection in a responsive patient with an adequate gag reflex

The correct answer is A. If adequate chest expansion and breath sounds cannot be achieved, tracheal intubation should be performed to ensure adequate ventilation. Indications for tracheal intubation include: (1) inability of the rescuer to ventilate the unconscious patient with less invasive methods and (2) absence of protective reflexes (coma or cardiac arrest). Answer B is incorrect because a respiratory rate less than 20 in a patient with severe chest pain is not in itself an indication of the need for intubation. Tracheal intubation secures an unprotected airway and facilitates adequate ventilation. There is no indication that this patient with chest pain has an unprotected airway or inadequate ventilation. Answer C is incorrect because the presence of

premature ventricular contractions does not indicate the need for control of the airway. Answer D is incorrect because it describes a conscious patient with an adequate airway.

4. Which of the following is the most important step to restore oxygenation and ventilation for the unresponsive, breathless submersion (near drowning) victim?

- a. attempt to drain water from breathing passages by performing the Heimlich maneuver
- b. begin chest compressions
- c. provide cervical spine stabilization because a diving accident may have occurred
- d. open the airway and begin rescue breathing as soon as possible even in the water

The correct answer is D. The first and most important treatment of the near-drowning victim is provision of immediate mouth to mouth ventilation. Prompt initiation of rescue breathing has a positive association with survival. Answer A is incorrect because the drainage of water is unnecessary and will delay provision of rescue breathing. The ACLS guidelines state “there is no need to clear the airway of aspirated water. Some victims aspirate nothing... At most only a modest amount of water is aspirated by the majority of drowning victims, and it is rapidly absorbed.” In addition the abdominal thrusts can cause injuries. Answer B is incorrect because chest compressions should be performed only if there are no signs of circulation after delivery of 2 breaths if the victim is unresponsive and not breathing. Answer C is incorrect because providing cervical spine stabilization will not restore oxygenation and ventilation.

5. You respond with 2 other rescuers to a 50 year old man who is unresponsive, pulseless, and not breathing. What tasks would you assign the other rescuers while you set up the AED?

- a. one rescuer should call rescue assistance and the others rescuer should begin CPR
- b. both rescuers should help set up the AED and provide CPR
- c. one rescuer should open the airway and begin rescue breathing, and the second rescuer should begin chest compressions
- d. recruit additional first responders to help

The correct answer is A. The rescuers should act simultaneously to ensure rapid EMS activation and immediate initiation of CPR. Answers B and C are incorrect because if both rescuers assist with setting up the AED or performing CPR, no one is activating the EMS system. Answer D is incorrect because 2 rescuers are already available to help.

6. An AED hangs on the wall suddenly a code is called, you grab the AED and run to the room where the resuscitation is ongoing. A colleague has begun CPR and confirms that the patient is in pulseless arrest. As you begin to attach the AED, you see a transdermal medication patch on the victim’s upper right chest, precisely where you were going to place an AED electrode pad. What is your most appropriate action?

- a. ignore the medication patch and place the electrode pad in the usual position
- b. avoid the medication patch and place the second electrode pad on the victim’s back
- c. remove the medication patch, wipe the area dry, and place the electrode pad in the correct position
- d. place the electrode pad on the victim’s right abdomen

The correct answer is C. Answer A is incorrect because if you place the electrode pad over the medication patch, it may result in reduced current delivery to the heart and reduced effectiveness of the shock. Answers B and D are incorrect because it does not recommended to suggest alternative sites for placement of AED pads to avoid a medication patch. Instead, it is

recommend that the medication patch be removed, the area wiped dry, and the electrode pad placed in the correct location.

7. A patient who has Ventricular Fibrillation has failed to respond to 3 shocks. Paramedics started an IV and inserted a tracheal tube, confirming proper placement. Which of the following drugs should this patient receive first?

- a. Amiodarone 300 mg IV push
- b. Lidocaine 1 to 1.5 mg/kg IV push
- c. Procainamide 30 mg/min up to a total dose of 17 mg/kg
- d. Epinephrine 1 mg IV push

The correct answer is D. If VF persists after 3 shocks, epinephrine should be administered. This drug produces vasoconstriction, elevating end diastolic pressure, and may improve coronary artery perfusion pressure. Answers A and B are incorrect because antiarrhythmics should be considered only after administration of 1 mg epinephrine IV plus a fourth shock. Answer C is incorrect because procainamide is not indicated for refractory VF.

8. After giving epinephrine 1 mg IV and a fourth shock, a patient remains in VF. You want to continue to administer epinephrine at appropriate doses and intervals if the patient remains in VF. Which epinephrine dose is recommended under these conditions?

- a. give the following epinephrine dose sequence, each 3 minutes apart: 1 mg, 3 mg, and 5 mg
- b. give a single high dose of epinephrine: 0.1 to 0.2 mg/kg
- c. give epinephrine 1 mg IV, then in 5 minutes start vasopressin 40 U IV every 3 to 5 minutes
- d. give epinephrine 1 mg IV; repeat 1 mg every 3 to 5 minutes

The correct answer is D. Epinephrine should be administered every 3 to 5 minutes during cardiac arrest. If the initial standard dose fails, administration of a single higher dose, eg 5 mg or 0.1 mg/kg, is left to the discretion of the clinician. Answers A and B are incorrect because it is not recommended for high-dose or escalating-dose epinephrine because of lack of demonstrated benefit and because of potential for harm. Answer C is incorrect because vasopressin is administered in a single dose. Epinephrine should be administered every 3 to 5 minutes during cardiac arrest.

9. Which of the following therapies is the most important intervention for VF/pulseless VT with the greatest effect on survival to hospital discharge?

- a. Epinephrine
- b. Defibrillation
- c. Oxygen
- d. Amiodarone

The correct answer is B. Treatment of VF/pulseless VT requires defibrillation. CPR prolongs the duration of VF and therefore the time the heart will be responsive to a shock. Answers A and D are incorrect because their effects on survival are minor compared with defibrillation. Vasopressors (epinephrine) and antiarrhythmics (amiodarone) come into play only when a patient with a VF fails to respond in 3 stacked shocks. The vast majority of VF patients who are successfully resuscitated respond with the first 3 shocks. Answer C is incorrect because, although oxygen is important, patients can be successfully ventilated with room air. The key to successful resuscitation is time from collapse to defibrillation.

10. A 60 yr old man persists in VF arrest despite 3 stacked shocks at appropriate energy levels. Your code team, however, has been unable to start an IV or insert a tracheal tube. Therefore administration of IV or tracheal medications will be delayed. What is the most appropriate immediate next step?

- a. deliver additional shocks in an attempt to defibrillate
- b. deliver a precordial thump
- c. perform a venous cut-down to gain IV access
- d. administer intramuscular epinephrine 2 mg

The correct answer is A. Repeated shocks for VF/VT should continue regardless of inability to deliver epinephrine, antiarrhythmics, or other medications. The most important treatment for VF is always prompt defibrillation. Answer B is incorrect because a precordial thump would be very unlikely to achieve a defibrillation in a patient who continues in VF after 3 shocks. Answer C is incorrect because it would be inappropriate to delay additional shocks to perform a surgical procedure. Answer D is incorrect because there is no human evidence regarding the use of intramuscular epinephrine in cardiac arrest.

11. A 75 year old homeless man is in cardiac arrest with pulseless VT at a rate of 220 bpm. After CPR, 3 shocks in rapid succession, 1mg IV epinephrine, plus 3 more shocks, the man continues to be in polymorphic pulseless VT. He appears wasted and malnourished. The paramedics recognize him as a chronic alcoholic known in the neighborhood. Because he remains in VT after 6 shocks, you are considering an antiarrhythmic. Which of the following agents would be most appropriate for this patient at this time?

- a. Amiodarone
- b. Procainamide
- c. Magnesium
- d. Diltiazem

The correct answer is C. Low levels of magnesium sulfate are very common in chronic malnourished people and alcoholics, and this man combined both risk factors. At certain levels of low magnesium, patients with refractory VF/pulseless VT will simply not convert without emergency replacement of magnesium. No other antiarrhythmic will be effective, and magnesium alone may be sufficient to render the fibrillating myocardium responsive to the next shock. In addition, magnesium is the agent of choice for treating torsades de pointes even when the torsades is not associated with hypomagnesemia. This man's VT, described as polymorphic VT, may well be Torsades.

12. You are called to assist in the attempted resuscitation of a patient who is demonstrating PEA. As you hurry to the patient's room, you review the information you learned in the ACLS course about management of PEA. Which one of the following about PEA is true?

- a. chest compressions should be administered only if the patient with PEA develops a ventricular rate of less than 50 bpm
- b. successful treatment of PEA requires identification and treatment of reversible causes
- c. atropine is the drug of choice for treatment of PEA, whether the ventricular rate is slow or fast
- d. PEA is rarely caused by hypovolemia, so fluid administration is contraindicated and should not be attempted

The correct answer is B. Successful treatment requires identification and treatment of reversible causes, such as 5 H's and 5 T's. PEA is the absence of a pulse in the presence of organized

cardiac electrical activity other than VT or VF. PEA, which can cause cardiac arrest, is often caused by reversible conditions that begin with either an “H” (hypovolemia, hypoxia, hydrogen ions or acidosis, hyperkalemia/hypokalemia, or hypothermia) or a “T” (tablets causing intentional or unintentional overdose, tamponade, tension pneumothorax, thrombosis of a coronary artery, or thrombosis in pulmonary artery). Answer A is incorrect because chest compressions should be provided to the patient in PEA regardless of the ventricular complexes. Answer C is incorrect because atropine is recommended if the PEA rate is slow or relatively slow. Atropine is not recommended for PEA with a rapid ventricular rate. Answer D is incorrect because hypovolemia is one of the most common causes.

13. For which of the following patients with PEA is sodium bicarbonate therapy (1 mEq/kg) most likely to be most effective?

- a. the patient with hypercarbic acidosis and tension pneumothorax treated with decompression
- b. the patient with a brief arrest interval
- c. the patient with documented severe hyperkalemia
- d. the patient with documented severe hypokalemia

The correct answer is C. The patient with severe hyperkalemia should be treated with the hyperkalemia sequence that begins with administration of calcium chloride and includes sodium bicarbonate and glucose plus insulin. Answer A is incorrect because sodium bicarbonate is contraindicated for patient with hypercarbic acidosis and inadequate ventilation. Administration of sodium bicarbonate to the patient with inadequate ventilation or ventilation compromised by a tension pneumothorax will result in greater hypercarbia and worsening of the respiratory acidosis. Answer B is incorrect because most patients with a brief arrest interval will not require sodium bicarbonate because the best way to correct any mild acidosis from a brief arrest interval is to restore a perfusing rhythm with effective ventilation. Answer D is incorrect because hypokalemia will be worsened by administration of sodium bicarbonate. Sodium bicarbonate alkalizes the serum, which produces an intracellular shift of potassium so that serum potassium falls.

14. Which of the following is the correct initial drug and dose for treatment of asystole?

- a. epinephrine 2mg IV
- b. atropine 0.5 mg IV
- c. lidocaine 1mg/kg IV
- d. epinephrine 1mg IV

The correct answer is D. Epinephrine 1mg IV is traditionally recommended for the treatment of asystole. Answer A is incorrect because this dose of epinephrine is noted as “may be used but is not recommended” and should be considered only if patient fails to respond to the conventional dose. It should not be administered as single dose of epinephrine. Answer B is incorrect because atropine 1mg IV should be administered after a dose of epinephrine. Answer C is incorrect because lidocaine is not included in the asystole algorithm.

15. You are considering transcutaneous pacing for a patient in asystole. Which of the following candidates would be most likely to respond to such a pacing attempt?

- a. the patient in asystole who has failed to respond to 20 minutes of BLS and ACLS therapy
- b. the patient in asystole following blunt trauma
- c. the patient in asystole following a defibrillatory shock

d. the patient who has just arrived in the emergency department following transport and CPR in the field for persistent asystole after submersion

The correct answer is C. Transcutaneous pacing is most likely to be effective in the patient in asystole following a defibrillatory shock if performed immediately. If the patient developed asystole immediately after defibrillation, that asystole would be short-lived. Answers A and D are incorrect because both characterize patients who have been in cardiac arrest for a prolonged time. Answer B is incorrect because reversible causes of cardiac arrest associated with blunt trauma include conditions such as hypovolemia, neurologic injury, tension pneumothorax, or major organ damage. It is unlikely that any of these causes would respond to transcutaneous pacing.

Source: American Heart Association ACLS Provider Manual