

# **Heart and Stroke Foundation of Canada**

## **Advanced Cardiovascular Life Support**

### **Written Pre-course Self-Assessment**

**May 2011**

## 2011 ACLS Written Pre-course Self-Assessment

1. **Ten minutes after an 85-year-old woman collapses, paramedics arrive and start CPR for the first time. The monitor shows fine (low-amplitude) VF. Which actions should they take next?**
  - a. Performing at least 5 minutes of vigorous CPR before attempting defibrillation
  - b. Inserting an ET tube and then attempting defibrillation
  - c. Delivering up to 3 precordial thumps while observing the patient's response on the monitor
  - d. Beginning cycles of CPR while preparing the defibrillator to use as soon as possible
  
2. **A cardiac arrest patient arrives in the ED with PEA and a heart rate of 30/min. CPR continues, proper ET tube placement is confirmed, and IV access is established. Which medication is most appropriate to give next?**
  - a. Calcium chloride 5 mL of 10% solution IV
  - b. Epinephrine 1 mg IV
  - c. Atropine 1 mg IV
  - d. Sodium bicarbonate 1 mEq/kg IV
  
3. **What is an advantage of using hands-free defibrillation pads instead of defibrillation paddles?**
  - a. Hands-free pads deliver more energy than paddles.
  - b. Hands-free pads increase electrical arc.
  - c. Hands-free pads allow for a more rapid defibrillation.
  - d. Hands-free pads have universal adaptors that can work with any machine.
  
4. **Which action is performed as you prepare for defibrillator discharge?**
  - a. Asking the person managing the airway to quickly intubate the patient before attempting defibrillation
  - b. Disconnecting monitor leads to prevent shock damage to monitor
  - c. Continuing compressions while charging the defibrillator
  - d. Checking the pulse while charging the defibrillator
  
5. **A woman with a history of narrow-complex SVT arrives in the ED. She is alert and oriented but pale. Heart rate is 165/min, and the ECG shows SVT. Blood pressure is 105/70 mm Hg. IV access has been established. Which is the most appropriate initial treatment?**
  - a. Adenosine 6 mg rapid IV push
  - b. Vagal maneuver
  - c. Synchronized cardioversion
  - d. Atropine 1 mg IV push

6. **What is a common but sometimes fatal mistake in cardiac arrest management?**
- A. Failure to obtain vascular access
  - B. Prolonged periods of no ventilations
  - C. Failure to perform endotracheal intubation
  - D. Prolonged interruptions in chest compressions
7. **You have attempted endotracheal intubation for a patient in respiratory arrest. When you attempt positive-pressure ventilation, you hear stomach gurgling over the epigastrium but no breath sounds. Waveform capnography is zero or flat. Which of the following is the most likely explanation for these findings?**
- a. Intubation of the esophagus
  - b. Intubation of the left main bronchus
  - c. Intubation of the right main bronchus
  - d. Bilateral tension pneumothorax
8. **Which statement about IV administration of medications during attempted resuscitation is true?**
- a. Give epinephrine via the intracardiac route if IV access is not obtained within 3 minutes.
  - b. Follow IV medications via *peripheral* veins with a fluid bolus.
  - c. Do not follow IV medications via *central* veins with a fluid bolus.
  - d. Infuse normal saline mixed with sodium bicarbonate intravenously during continuous CPR.
9. **A 60-year-old man with recurrent VF now has a wide-complex rhythm with no pulse after administration of epinephrine 1 mg IV and a third shock. Which drug is most appropriate to give next?**
- a. Amiodarone 300 mg IV push
  - b. Lidocaine 150 mg IV push
  - c. Magnesium 3 g IV push diluted in 10 mL of D<sub>5</sub>W
  - d. Procainamide 20 mg/min IV infusion, up to a maximum dose of 17 mg/kg
10. **While treating a patient in persistent VF arrest after 2 shocks, you consider using IV vasopressin. Which guideline for use of vasopressin is true?**
- a. Give vasopressin 40 units every 3 to 5 minutes.
  - b. Vasopressin has a shorter half-life than epinephrine.
  - c. Vasopressin is an alternative to a first or second dose of epinephrine in pulseless arrest.
  - d. Give vasopressin as the first-line pressor agent for clinical shock caused by hypovolemia.
11. **Which cause of PEA is most likely to respond to immediate treatment?**
- a. Massive pulmonary embolism
  - b. Hypovolemia
  - c. Massive acute myocardial infarction
  - d. Myocardial rupture

- 12. Which drug-dose is recommended as the initial medication for a patient in asystole?**
- a. Atropine 0.5 mg IV
  - b. Atropine 3 mg IV
  - c. Epinephrine 1 mg IV
  - d. Epinephrine 3 mg IV
- 13. A patient with a heart rate of 40/min reports chest pain. He is confused, and the pulse oximeter shows oxygen saturation is 91% on room air. After oxygen administration, what is the first drug you should administer to this patient?**
- a. Atropine 0.5 mg IV bolus
  - b. Epinephrine 1 mg IV push
  - c. Isoproterenol IV infusion 2 to 10 mcg/min
  - d. Adenosine 6 mg rapid IV push
- 14. Which statement correctly describes the ventilations that should be provided after ET tube insertion, cuff inflation, and verification of tube position?**
- a. Deliver 1 ventilation every 6 to 8 seconds (8 to 10 ventilations per minute) without pauses in chest compressions.
  - b. Deliver ventilations as rapidly as possible as long as visible chest rise occurs with each breath.
  - c. Deliver ventilations with a tidal volume of 3 to 5 mL/kg.
  - d. Deliver ventilations with room air until COPD is ruled out.
- 15. A patient in the ED reports 30 minutes of severe, crushing, substernal chest pain. Blood pressure is 110/70 mm Hg, heart rate is 58/min, and the monitor shows regular sinus bradycardia. The patient has received aspirin 325 mg orally, oxygen 4 L/min via nasal cannula, and 3 sublingual nitroglycerin tablets 5 minutes apart, but he continues to have severe pain. Which agent should be given next if there are no contraindications?**
- a. Atropine 0.5 to 1 mg IV
  - b. Furosemide 20 to 40 mg IV
  - c. Lidocaine 1 to 1.5 mg/kg IV
  - d. Morphine 2 to 4 mg IV
- 16. Which agent is used frequently in the early management of acute coronary ischemia?**
- a. Lidocaine IV bolus
  - b. Chewable aspirin
  - c. Oral ACE inhibitor
  - d. Calcium channel blocker given orally

17. **A 50-year-old man who is profusely diaphoretic and hypertensive reports crushing substernal chest pain and severe shortness of breath. He has a history of hypertension. He chewed 2 low-dose aspirins at home and is now receiving oxygen. Which treatment sequences is most appropriate at this time?**
- Morphine and then nitroglycerin, but only if morphine fails to relieve the pain
  - Nitroglycerin and then morphine, but only if ST elevation is >3 mm and no contraindications exist
  - Nitroglycerin and then morphine, but only if nitroglycerin fails to relieve the pain and no contraindications exist
  - Nitroglycerin only because chronic hypertension is a contraindication for morphine
18. **A 50-year-old man has a 3-mm ST elevation in leads V<sub>2</sub> to V<sub>4</sub>. Chest pain has been relieved with sublingual nitroglycerin. Blood pressure is 130/80 mm Hg, and heart rate is 65/min. Which treatment is most appropriate for this patient at this time?**
- Calcium channel blocker IV
  - Transcutaneous pacing at 85/min
  - Percutaneous coronary intervention (PCI)
  - Fibrinolytics
19. **A 70-year-old woman reports a moderate headache and trouble walking. She has a facial droop, slurred speech, and difficulty raising her right arm. She says that she takes “several medications” for high blood pressure. Which action is most appropriate at this time?**
- Activate the emergency response system; tell the dispatcher you need assistance for a woman who is displaying signs and symptoms of an acute subarachnoid hemorrhage.
  - Activate the emergency response system; tell the dispatcher you need assistance for a woman who is displaying signs and symptoms of a stroke.
  - Activate the emergency response system; have the woman take aspirin 325 mg.
  - Drive the woman to the nearby ED in your car.
20. **Within 45 minutes of her arrival in the ED, which evaluation sequence should be performed for a 70-year-old woman with rapid onset of headache, garbled speech, and weakness of the right arm and leg? History, physical examination, neurologic assessments, and then a**
- noncontrast* head CT with interpretation by a radiologist
  - noncontrast* head CT. Start fibrinolytic treatment if CT scan is positive for stroke
  - lumbar puncture (LP) and *contrast* head CT if LP is negative for blood
  - contrast* head CT. Start fibrinolytic treatment when improvement in neurologic signs is noted
21. **Which rhythm is a proper indication for transcutaneous pacing if atropine fails to work?**
- Sinus bradycardia with no symptoms
  - Normal sinus rhythm with hypotension and shock
  - Complete AV block with shortness of breath
  - Asystole that follows 6 or more defibrillation shocks

22. Which cause of out-of-hospital asystole is most likely to respond to treatment?
- Prolonged cardiac arrest
  - Prolonged submersion in warm water
  - Drug overdose
  - Blunt multisystem trauma
23. A 34-year-old woman with a history of mitral valve prolapse presents to the ED with palpitations. Her vital signs are as follows: heart rate is 165/min, respiratory rate is 14/min, blood pressure is 118/92 mm Hg, and oxygen saturation is 98% on room air. Her lungs sound clear, and she reports no shortness of breath or dyspnea on exertion. The ECG and monitor display a regular narrow-complex tachycardia. Which term best describes her condition?
- Stable SVT
  - Unstable SVT
  - Heart rate appropriate for clinical condition
  - Tachycardia secondary to poor cardiovascular function
24. A 75-year-old man presents to the ED with a history of light-headedness, palpitations, and mild exercise intolerance lasting 1 week. The initial 12-lead ECG displays atrial fibrillation, which continues to show on the monitor at an irregular heart rate of 120 to 150/min and a blood pressure of 100/70 mm Hg. Which therapy is the most appropriate next intervention?
- Sedation, analgesia, and then immediate cardioversion
  - Lidocaine 1 to 1.5 mg/kg IV bolus
  - Amiodarone 300 mg IV bolus
  - Seeking expert consultation
25. You prepare to cardiovert a 48-year-old woman with unstable tachycardia. The monitor/defibrillator is in sync mode. The patient suddenly becomes unresponsive and pulseless as the rhythm changes to an irregular, chaotic, VF-like pattern. You charge to 200 J and press the SHOCK button, but the defibrillator does not deliver a shock. Why?
- The defibrillator/monitor battery failed.
  - The sync switch failed.
  - You cannot shock VF in sync mode.
  - A monitor lead has lost contact, producing the pseudo-VF rhythm.
26. Vasopressin can be recommended for which of the following rhythms?
- SVT
  - Second-degree AV block
  - PEA
  - Monomorphic wide-complex tachycardia with a pulse

27. **Chest compressions and effective bag-mask ventilations are ongoing in a patient with no pulse. The ECG shows sinus bradycardia at a rate of 30/min. Which action should be done next?**
- a. Administering atropine 1 mg IV
  - b. Initiating transcutaneous pacing at a rate of 60/min
  - c. Starting a dopamine IV infusion at 15 to 20 mcg/ kg per minute
  - d. Giving 1 mg epinephrine IV
28. **The following patients were diagnosed with acute ischemic stroke. Which of these patients might be a candidate for IV fibrinolytic therapy?**
- a. A 73-year-old woman who lives alone and was found unresponsive by a neighbor
  - b. A 65-year-old man presenting approximately 5 hours after onset of symptoms
  - c. A 62-year-old woman presenting 1 hour after onset of symptoms
  - d. A 58-year-old man diagnosed with bleeding ulcers 1 week before onset of symptoms
29. **A 25-year-old woman presents to the ED and says she is having another episode of SVT. Her medical history includes an electrophysiologic stimulation study (EPS) that confirmed a reentry tachycardia, no Wolff-Parkinson-White syndrome, and no pre-excitation. Heart rate is 180/min. The patient reports palpitations and mild shortness of breath. Vagal maneuvers with carotid sinus massage have no effect on heart rate or rhythm. Which is the most appropriate next intervention?**
- a. DC cardioversion
  - b. IV diltiazem
  - c. IV propranolol
  - d. IV adenosine
30. **A patient with a heart rate of 30 to 40/min reports dizziness, cool and clammy extremities, and dyspnea. All treatment modalities are present. What would you do first?**
- a. Give atropine 0.5 mg IV bolus.
  - b. Give epinephrine 1 mg IV bolus.
  - c. Start dopamine IV infusion 2 to 10 mcg/min.
  - d. Begin immediate transcutaneous pacing, sedating the patient if possible.

## 2011 ACLS Written Precourse Self-Assessment Answer Key

1. **d** [see *ACLS Provider Manual*, pages 57 and 62, “Shock First vs CPR First” and “Minimal Interruption of Chest Compressions”]
2. **b** [see *ACLS Provider Manual*, page 65, “Shock and Vasopressors (Box 6)”]
3. **c** [see *ACLS Provider Manual*, page 57, “Foundational Facts: Alternative AED Electrode Pad Placement Positions”]
4. **c** [see *ACLS Provider Manual*, page 57, “FYI 2010 Guidelines: Coordinating Shock Delivery and CPR”]
5. **b** [see *ACLS Provider Manual*, page 129, “Narrow QRS, Regular Rhythm (Box 7)”]
6. **d** [see *ACLS Provider Manual*, page 64, “Foundational Facts: Paddles vs Pads”]
7. **a** [see ACLS Student Website, Supplementary Material, “Advanced Airway Management”]
8. **b** [see ACLS Student Website, Supplementary Material, “General IV Principles”]
9. **a** [see *ACLS Provider Manual*, pages 65-66, “Shock and Antiarrhythmics (Box 8)”]
10. **c** [see *ACLS Provider Manual*, page 65, “Shock and Vasopressors (Box 6)”]
11. **b** [see *ACLS Provider Manual*, pages 83-84, Table 3 and “Hypovolemia”]
12. **c** [see *ACLS Provider Manual*, page 88, “Administer Vasopressors (Box 10)”]
13. **a** [see *ACLS Provider Manual*, page 111, “Treatment Sequence: Atropine”]
14. **a** [see *ACLS Provider Manual*, page 48, “Foundational Facts: Rescue Breaths for CPR With an Advanced Airway in Place”]
15. **d** [see *ACLS Provider Manual*, pages 97-98, “Administer Oxygen and Drugs”]
16. **b** [see *ACLS Provider Manual*, pages 96-97, “Starting With Dispatch” and “Administer Oxygen and Drugs”]
17. **c** [see *ACLS Provider Manual*, pages 97-98, “Administer Oxygen and Drugs”]
18. **c** [see *ACLS Provider Manual*, pages 101-103, “Early Reperfusion Therapy” and “Use of PCI”]
19. **b** [see *ACLS Provider Manual*, pages 135-136, “Warning Signs and Symptoms” and “Activate EMS System Immediately”]
20. **a** [see *ACLS Provider Manual*, pages 141-145, “CT Scan: Hemorrhage or No Hemorrhage (Box 5)”]
21. **c** [see *ACLS Provider Manual*, page 111, “Treatment Sequence: Pacing”]
22. **c** [see *ACLS Provider Manual*, pages 87 and 90, “Asystole as an End Point” and “Duration of Resuscitative Efforts”]
23. **a** [see *ACLS Provider Manual*, page 128, “Decision Point: Stable or Unstable (Box 3)”]

- 24. d** [see *ACLS Provider Manual*, pages 128, “Wide (Broad)-Complex Tachycardias (Box 6)”]
- 25. c** [see *ACLS Provider Manual*, page 123, “Technique”]
- 26. c** [see *ACLS Provider Manual*, pages 78 and 81, “Drugs for PEA” and “Administer Vasopressors (Box 10)”]
- 27. d** [see *ACLS Provider Manual*, page 81, “Administer Vasopressors (Box 10)”]
- 28. c** [see *ACLS Provider Manual*, pages 133 and 135, “Goals of Stroke Care” and “Critical Time Periods”]
- 29. d** [see *ACLS Provider Manual*, page 129, “Narrow QRS, Regular Rhythm (Box 7)”]
- 30. a** [see *ACLS Provider Manual*, pages 110-111, “Treatment Sequence Summary (Box 4)”]