

American Heart Association

**Advanced Cardiovascular
Life Support
Written Precourse
Self-Assessment**

October 21, 2020

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The written version of the Advanced Cardiovascular Life Support (ACLS) Precourse Self-Assessment (PSA) must be administered by an instructor—for exam security—before the student participates in the course. This needs to be completed well in advance of the course at the discretion of the Training Center Coordinator.

Students may take the PSA as many times as needed to achieve a passing rate of at least 70%, which is consistent with taking the PSA online. If a student requires a retake of the PSA, the instructor should provide remediation to the student and then allow the student to repeat the PSA. If a student repeatedly fails (and is unable to pass), the instructor will determine if the student is not an appropriate fit for the course or if the course is too advanced for the student's knowledge level.

Student Answer Sheet ACLS Written Precourse Self-Assessment

Name: _____ Date: _____

Rhythm Identification

Question	Answer
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	

Pharmacology

Question	Answer			
1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D
11.	A	B	C	D
12.	A	B	C	D
13.	A	B	C	D
14.	A	B	C	D
15.	A	B	C	D
16.	A	B	C	D
17.	A	B	C	D
18.	A	B	C	D
19.	A	B	C	D
20.	A	B	C	D

Practical Application

Question	Answer			
1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D
8.	A	B	C	D
9.	A	B	C	D
10.	A	B	C	D
11.	A	B	C	D
12.	A	B	C	D
13.	A	B	C	D
14.	A	B	C	D
15.	A	B	C	D
16.	A	B	C	D
17.	A	B	C	D
18.	A	B	C	D
19.	A	B	C	D
20.	A	B	C	D

Advanced Cardiovascular Life Support Written Precourse Self-Assessment

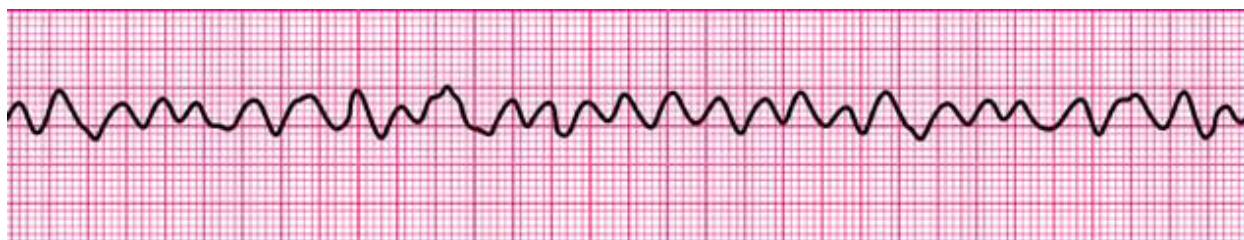
Rhythm Identification

The following rhythm strips are representative of the types of rhythms you will need to identify at the ACLS learning stations. This section of the precourse self-assessment will test your ability to identify the rhythms in the core ACLS algorithms and cases.

If you have difficulty with rhythm interpretation, we strongly suggest that you spend additional time reviewing these basic arrhythmias before you take the ACLS Provider Course.

For questions 1 through 20 in this section, identify each rhythm by selecting the single best answer. Write your answer on the answer sheet provided.

1.



- | | |
|--|---|
| <input type="checkbox"/> Agonal rhythm/asystole | <input type="checkbox"/> Second-degree atrioventricular block (Mobitz I Wenckebach) |
| <input type="checkbox"/> Atrial fibrillation | <input type="checkbox"/> Second-degree atrioventricular block (Mobitz II block) |
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2.



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3.



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6.



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7.



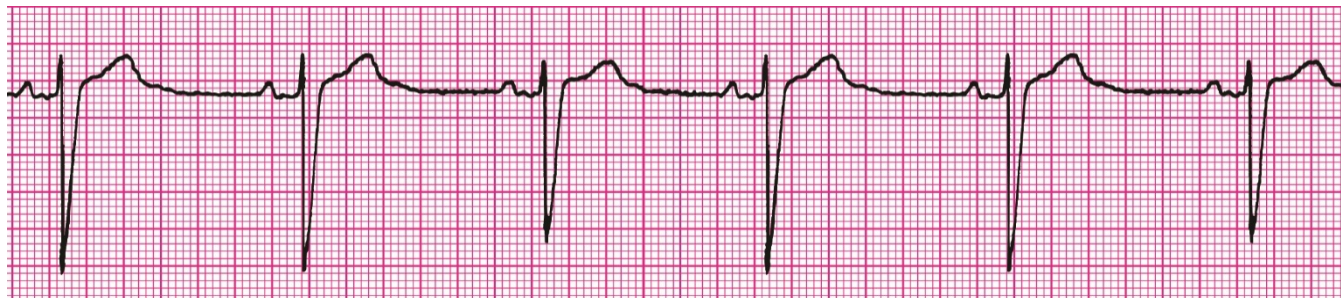
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9.



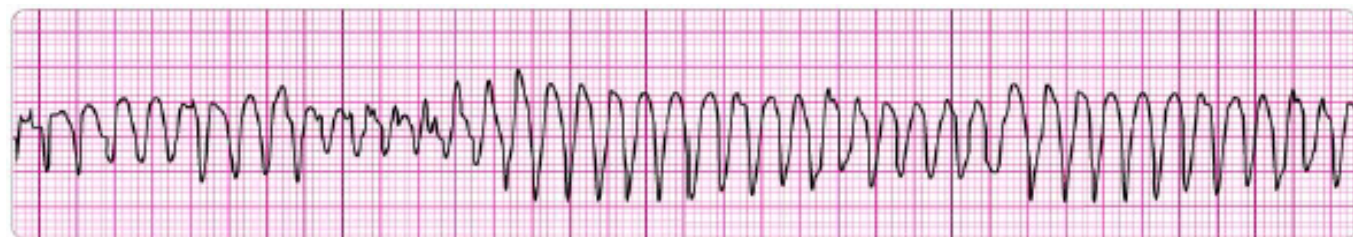
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10.



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11.



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12.



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13. Patient has no pulse with this rhythm



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14.



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15.



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16.



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17.



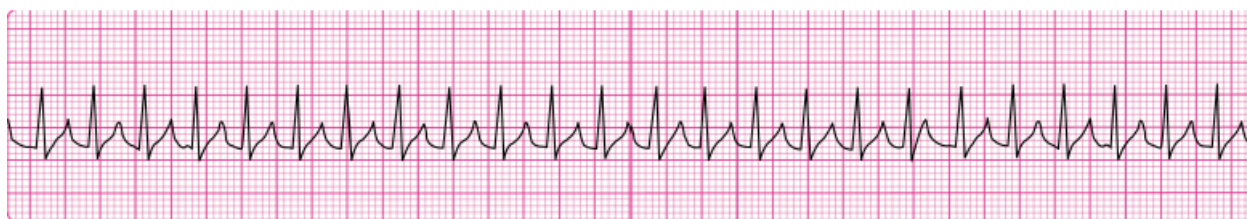
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18.



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19.



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Pharmacology

The following pharmacology questions test your knowledge of core drugs and algorithms used in the ACLS Provider Course as well as your ability to use these drugs in scenarios similar to the learning stations and the Megacode Testing Station.

If you have difficulty with drug knowledge and use, we strongly suggest that you spend additional time reviewing the ACLS pharmacology and algorithms.

Use the answer sheet provided to circle your selected answer.

1. A patient has a rapid irregular wide-complex tachycardia. The ventricular rate is 138/min. He is asymptomatic, with a blood pressure of 110/70 mm Hg. He has a history of angina. What action is recommended next?
 - A. Giving adenosine 6 mg IV bolus
 - B. Giving lidocaine 1 to 1.5 mg IV bolus
 - C. Performing synchronized cardioversion
 - D. Seeking expert consultation
2. A patient with sinus bradycardia and a heart rate of 42/min has diaphoresis and a blood pressure of 80/60 mm Hg. What is the initial dose of atropine?
 - A. 0.1 mg
 - B. 0.5 mg
 - C. 1 mg
 - D. 3 mg
3. A 57-year-old woman has palpitations, chest discomfort, and tachycardia. The monitor shows a regular wide-complex QRS at a rate of 180/min. She becomes diaphoretic, and her blood pressure is 80/60 mm Hg. Which action do you take next?
 - A. Establish IV access
 - B. Obtain a 12-lead ECG
 - C. Perform electrical cardioversion
 - D. Seek expert consultation
4. You arrive on the scene with the code team. High-quality CPR is in progress. An AED has previously advised "no shock indicated." A rhythm check now finds asystole. After resuming high-quality compressions, which action do you take next?
 - A. Call for a pulse check
 - B. Establish IV or IO access
 - C. Insert a laryngeal airway
 - D. Perform endotracheal intubation
5. A patient with possible STEMI has ongoing chest discomfort. What is a contraindication to nitrate administration?
 - A. Anterior wall myocardial infarction
 - B. Heart rate less than 90/min
 - C. Systolic blood pressure greater than 180 mm Hg
 - D. Use of a phosphodiesterase inhibitor within the previous 24 hours

6. In which situation does bradycardia require treatment?
 - A. 12-lead ECG showing a normal sinus rhythm
 - B. Hypotension
 - C. Diastolic blood pressure greater than 90 mm Hg
 - D. Systolic blood pressure greater than 100 mm Hg
7. A patient is in cardiac arrest. High-quality chest compressions are being given. The patient is intubated, and an IV has been started. The rhythm is asystole. What is the first drug/dose to administer?
 - A. Atropine 0.5 mg IV/IO
 - B. Atropine 1 mg IV/IO
 - C. Dopamine 2 to 20 mcg/kg per minute IV/IO
 - D. Epinephrine 1 mg IV/IO
8. A patient has sinus bradycardia with a heart rate of 36/min. Atropine has been administered to a total dose of 3 mg. A transcutaneous pacemaker has failed to capture. The patient is confused, and her blood pressure is 88/56 mm Hg. Which therapy is now indicated?
 - A. Atropine 1 mg
 - B. Epinephrine 2 to 10 mcg/min
 - C. Adenosine 6 mg
 - D. Normal saline 250 mL to 500 mL bolus
9. A patient is in cardiac arrest. Ventricular fibrillation has been refractory to an initial shock. If no pathway for medication administration is in place, which method is preferred?
 - A. Central line
 - B. Endotracheal tube
 - C. External jugular vein
 - D. IV or IO
10. A patient is in refractory ventricular fibrillation. High-quality CPR is in progress. One dose of epinephrine was given after the second shock. An antiarrhythmic drug was given immediately after the third shock. You are the team leader. Which medication do you order next?
 - A. Epinephrine 1 mg
 - B. Epinephrine 3 mg
 - C. Sodium bicarbonate 50 mEq
 - D. A second dose of the antiarrhythmic drug
11. A 62-year-old man suddenly experienced difficulty speaking and left-sided weakness. He meets initial criteria for fibrinolytic therapy, and a CT scan of the brain is ordered. Which best describes the guidelines for antiplatelet and fibrinolytic therapy?
 - A. Give aspirin 160 to 325 mg to be chewed immediately
 - B. Give aspirin 160 mg and clopidogrel 75 mg orally
 - C. Give heparin if the CT scan is negative for hemorrhage
 - D. Hold aspirin for at least 24 hours if rtPA is administered
12. A patient is in cardiac arrest. Ventricular fibrillation has been refractory to a second shock. Which drug should be administered first?
 - A. Atropine 1 mg IV/IO
 - B. Epinephrine 1 mg IV/IO
 - C. Lidocaine 1 mg/kg IV/IO
 - D. Sodium bicarbonate 50 mEq IV/IO

13. A patient with STEMI has ongoing chest discomfort. Heparin 4000 units IV bolus and a heparin infusion of 1000 units per hour are being administered. The patient did not take aspirin because he has a history of gastritis, which was treated 5 years ago. What is your next action?
- A. Give aspirin 162 to 325 mg to chew
 - B. Give clopidogrel 300 mg orally
 - C. Give enteric-coated aspirin 75 mg orally
 - D. Give enteric-coated aspirin 325 mg rectally
14. What is the indication for the use of magnesium in cardiac arrest?
- A. Ventricular tachycardia associated with a normal QT interval
 - B. Shock-refractory monomorphic ventricular tachycardia
 - C. Pulseless ventricular tachycardia—associated torsades de pointes
 - D. Shock-refractory ventricular fibrillation
15. A 35-year-old woman has palpitations, light-headedness, and a stable tachycardia. The monitor shows a regular narrow-complex QRS at a rate of 180/min. Vagal maneuvers have not been effective in terminating the rhythm. An IV has been established. Which drug should be administered?
- A. Adenosine 6 mg
 - B. Atropine 0.5 mg
 - C. Epinephrine 2 to 10 mcg/kg per minute
 - D. Lidocaine 1 mg/kg
16. You are caring for a 66-year-old man with a history of a large intracerebral hemorrhage 2 months ago. He is being evaluated for another acute stroke. The CT scan is negative for hemorrhage. The patient is receiving oxygen via nasal cannula at 2 L/min, and an IV has been established. His blood pressure is 180/100 mm Hg. Which drug do you anticipate giving to this patient?
- A. Aspirin
 - B. Glucose (D50)
 - C. Nicardipine
 - D. rtPA
17. A patient is in pulseless ventricular tachycardia. Two shocks and 1 dose of epinephrine have been given. Which drug should be given next?
- A. Adenosine 6 mg
 - B. Amiodarone 300 mg
 - C. Epinephrine 3 mg
 - D. Lidocaine 0.5 mg/kg
18. A patient is in refractory ventricular fibrillation and has received multiple appropriate defibrillation shocks, epinephrine 1 mg IV twice, and an initial dose of amiodarone 300 mg IV. The patient is intubated. Which best describes the recommended second dose of amiodarone for this patient?
- A. 1 mg/kg IV push
 - B. 1 to 2 mg/min infusion
 - C. 150 mg IV push
 - D. 300 mg IV push

19. A monitored patient in the ICU developed a sudden onset of narrow-complex tachycardia at a rate of 220/min. The patient's blood pressure is 128/58 mm Hg, the PETCO₂ is 38 mm Hg, and the pulse oximetry reading is 98%. There is vascular access in the left arm, and the patient has not been given any vasoactive drugs. A 12-lead ECG confirms a supraventricular tachycardia with no evidence of ischemia or infarction. The heart rate has not responded to vagal maneuvers. What is your next action?
- A. Administer adenosine 6 mg IV push
 - B. Administer amiodarone 300 mg IV push
 - C. Perform synchronized cardioversion at 50 J
 - D. Perform synchronized cardioversion at 200 J
20. Which intervention is most appropriate for the treatment of a patient in asystole?
- A. Atropine
 - B. Defibrillation
 - C. Epinephrine
 - D. Transcutaneous pacing

Practical Application

This section of the PSA will test your ability to identify a rhythm and then select a treatment or intervention on the basis of your identification of the rhythm and your knowledge of ACLS drugs and treatment algorithms. It will also test your knowledge of high-quality basic life support and airway management.

In previous parts of PSA, you (1) identified these rhythms and reviewed your rhythm analysis skills and (2) demonstrated knowledge of the pharmacology and drug interventions required to treat these rhythms.

For the purposes of the questions in this section, assume that you are the team leader unless otherwise directed. Assume that you can administer medications by the intravenous or intraosseous route unless otherwise noted. A manual defibrillator is available unless otherwise noted. If you have difficulty with the practical application questions, review the ACLS rhythms, pharmacology, and algorithms.

Use the answer sheet provided to circle your selected answer.

1. Your patient is a 56-year-old woman with a history of type 2 diabetes who reports feeling dizzy. She is pale and diaphoretic. Her blood pressure is 80/60 mm Hg. The cardiac monitor documents the rhythm shown here. She is receiving oxygen at 4 L/min by nasal cannula, and an IV has been established. What do you administer next?



- A. Atropine 1 mg IV
 - B. Dopamine at 2 to 10 mcg/kg per minute
 - C. Glucose 50% IV push
 - D. Morphine sulfate 4 mg IV
2. A patient was in refractory ventricular fibrillation. A third shock has just been administered. Your team looks to you for instructions. What is your next action?



- A. Check the carotid pulse
- B. Give amiodarone 300 mg IV
- C. Give atropine 1 mg IV
- D. Resume high-quality chest compressions

3. After initiation of CPR and 1 shock for ventricular fibrillation, this rhythm is present on the next rhythm check. A second shock is given, and chest compressions are resumed immediately. An IV is in place, and no drugs have been given. Bag-mask ventilations are producing visible chest rise. What is your next intervention?



- A. Administer 3 sequential (stacked) shocks at 360 J (monophasic defibrillator)
 - B. Give amiodarone 300 mg IV/IO
 - C. Give epinephrine 1 mg IV/IO
 - D. Intubate and administer 100% oxygen
4. A 35-year-old woman presents with a chief complaint of palpitations. She has no chest discomfort, shortness of breath, or light-headedness. Her blood pressure is 120/78 mm Hg. Which intervention is indicated first?



- A. Adenosine 3 mg IV bolus
 - B. Adenosine 12 mg IV slow push (over 1 to 2 minutes)
 - C. Metoprolol 5 mg IV and repeat if necessary
 - D. Vagal maneuvers
5. You are the code team leader and arrive to find a patient with CPR in progress. On the next rhythm check, you see the rhythm shown here. Team members tell you that the patient was well but reported chest discomfort and then collapsed. She has no pulse or respirations. Bag-mask ventilations are producing visible chest rise, and IO access has been established. Which intervention would be your next action?



- A. Atropine 1 mg
- B. Dopamine at 10 to 20 mcg/kg per minute
- C. Epinephrine 1 mg
- D. Intubation and administration of 100% oxygen

6. A patient's 12-lead ECG is transmitted by the paramedics and shows a STEMI. When the patient arrives in the emergency department, the rhythm shown here is seen on the cardiac monitor. The patient has resolution of moderate (5/10) chest pain after 3 doses of sublingual nitroglycerin. Blood pressure is 104/70 mm Hg. Which intervention is most important in reducing this patient's in-hospital and 30-day mortality rate?



- A. Application of transcutaneous pacemaker
 - B. Atropine administration
 - C. Nitroglycerin administration
 - D. Reperfusion therapy
7. You arrive on the scene to find CPR in progress. Nursing staff report the patient was recovering from a pulmonary embolism and suddenly collapsed. Two shocks have been delivered, and an IV has been initiated. What do you administer now?



- A. Atropine 0.5 mg IV
 - B. Epinephrine 1 mg IV
 - C. Endotracheal intubation
 - D. Transcutaneous pacing
8. A patient becomes unresponsive. You are uncertain if a faint pulse is present. The rhythm shown here is seen on the cardiac monitor. An IV is in place. Which action do you take next?

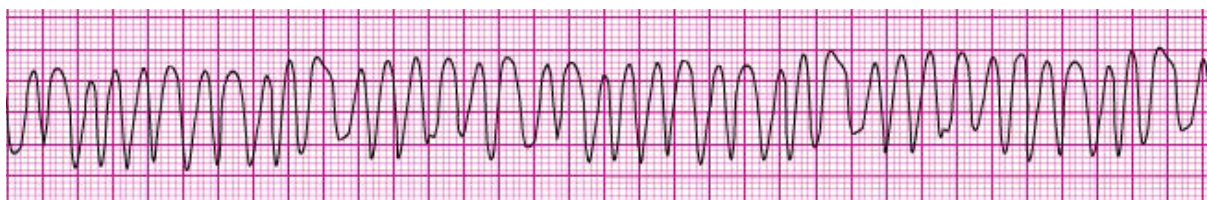


- A. Begin transcutaneous pacing
- B. Start high-quality CPR
- C. Administer atropine 1 mg
- D. Administer epinephrine 1 mg IV

9. A 45-year-old woman with a history of palpitations develops light-headedness and palpitations. She has received adenosine 6 mg IV for the rhythm shown here, without conversion of the rhythm. She is now extremely apprehensive. Her blood pressure is 128/70 mm Hg. What is the next appropriate intervention?



- A. Administer adenosine 12 mg IV
 - B. Perform unsynchronized cardioversion
 - C. Perform vagal maneuvers
 - D. Perform synchronized cardioversion
10. A patient has been resuscitated from cardiac arrest. During post-ROSC treatment, the patient becomes unresponsive, with the rhythm shown here. Which action is indicated next?



- A. Give an immediate unsynchronized high-energy shock (defibrillation dose)
- B. Give lidocaine 1 to 1.5 mg/kg IV
- C. Perform synchronized cardioversion
- D. Repeat amiodarone 300 mg IV

High-Quality CPR

11. What is the recommended compression rate for high-quality CPR?
 - A. 50 to 60 compressions per minute
 - B. 70 to 80 compressions per minute
 - C. 90 to 100 compression per minute
 - D. 100 to 120 compressions per minute
12. How does complete chest recoil contribute to effective CPR?
 - A. Allows maximum blood return to the heart
 - B. Reduces rescuer fatigue
 - C. Reduces the risk of rib fractures
 - D. Increases the rate of chest compressions
13. What is the recommended depth of chest compressions for an adult victim?
 - A. At least 1.5 inches
 - B. At least 2 inches
 - C. At least 2.5 inches
 - D. At least 3 inches
14. What is the maximum interval for pausing chest compressions?
 - A. 10 seconds
 - B. 15 seconds
 - C. 20 seconds
 - D. 25 seconds
15. How often should you switch chest compressors to avoid fatigue?
 - A. About every 2 minutes
 - B. About every 3 minutes
 - C. About every 4 minutes
 - D. About every 5 minutes
16. Your patient is not responsive and is not breathing. You can palpate a carotid pulse. Which action do you take next?
 - A. Apply an AED
 - B. Obtain a 12-lead ECG
 - C. Start an IV
 - D. Start rescue breathing

17. Which action should you take immediately after providing an AED shock?
- A. Check the pulse rate
 - B. Prepare to deliver a second shock
 - C. Resume chest compressions
 - D. Start rescue breathing
18. Which action is likely to cause air to enter the victim's stomach (gastric inflation) during bag-mask ventilation?
- A. Giving breaths over 1 second
 - B. Ventilating too quickly
 - C. Providing a good seal between the face and the mask
 - D. Providing just enough volume for the chest to rise
19. What action minimizes the risk of air entering the victim's stomach during bag-mask ventilation?
- A. Ventilating until you see the chest rise
 - B. Ventilating as quickly as you can
 - C. Squeezing the bag with both hands
 - D. Delivering the largest breath you can
20. You are providing bag-mask ventilations to a patient in respiratory arrest. How often should you provide ventilations?
- A. Every 6 seconds
 - B. Every 10 seconds
 - C. Every 12 seconds
 - D. Every 14 seconds

Advanced Cardiovascular Life Support Written Precourse Self-Assessment Answer Key

Rhythm Identification

1. Ventricular fibrillation
2. Normal sinus rhythm
3. Sinus bradycardia
4. Supraventricular tachycardia
5. Second-degree atrioventricular block (Mobitz II block)
6. Second-degree atrioventricular block (Mobitz I Wenckebach)
7. Ventricular fibrillation
8. Third-degree atrioventricular block
9. Sinus bradycardia
10. Atrial flutter
11. Polymorphic ventricular tachycardia
12. Second-degree atrioventricular block (Mobitz I Wenckebach)
13. Pulseless electrical activity
14. Sinus tachycardia
15. Second-degree atrioventricular block (Mobitz II block)
16. Agonal rhythm/asystole
17. Monomorphic ventricular tachycardia
18. Atrial fibrillation
19. Supraventricular tachycardia
20. Ventricular fibrillation

Pharmacology

- | | |
|-------|-------|
| 1. D | 11. D |
| 2. C | 12. B |
| 3. C | 13. A |
| 4. B | 14. C |
| 5. D | 15. A |
| 6. B | 16. A |
| 7. D | 17. B |
| 8. B | 18. C |
| 9. D | 19. A |
| 10. A | 20. C |

Practical Application

- | | |
|-------|-------|
| 1. A | 11. D |
| 2. D | 12. A |
| 3. C | 13. B |
| 4. D | 14. A |
| 5. C | 15. A |
| 6. D | 16. D |
| 7. B | 17. C |
| 8. B | 18. B |
| 9. A | 19. A |
| 10. A | 20. A |