

American Heart Association

Pediatric Advanced Life Support Exams A and B

October 6, 2016

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**Student Answer Sheet
Pediatric Advanced Life Support Exam**

Name: _____ Date: _____ Version: _____

| 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 |
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| 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 |
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| 21. | A | B | C | D |
| 22. | A | B | C | D |
| 23. | A | B | C | D |
| 24. | A | B | C | D |
| 25. | A | B | C | D |

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| 26. | A | B | C | D |
| 27. | A | B | C | D |
| 28. | A | B | C | D |
| 29. | A | B | C | D |
| 30. | A | B | C | D |
| 31. | A | B | C | D |
| 32. | A | B | C | D |
| 33. | A | B | C | D |
| 34. | A | B | C | D |
| 35. | A | B | C | D |
| 36. | A | B | C | D |
| 37. | A | B | C | D |
| 38. | A | B | C | D |
| 39. | A | B | C | D |
| 40. | A | B | C | D |
| 41. | A | B | C | D |
| 42. | A | B | C | D |
| 43. | A | B | C | D |
| 44. | A | B | C | D |
| 45. | A | B | C | D |
| 46. | A | B | C | D |
| 47. | A | B | C | D |
| 48. | A | B | C | D |
| 49. | A | B | C | D |
| 50. | A | B | C | D |



American Heart Association

Pediatric Advanced Life Support Exam A

October 6, 2016

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Pediatric Advanced Life Support Exam A
(50 questions)

Please do not mark on this exam. Record the best answer on the separate answer sheet.

1. A 6-month-old infant is unresponsive. You begin checking for breathing at the same time you check for the infant's pulse. Which is the maximum time you should spend when trying to simultaneously check for breathing and palpate the infant's pulse before starting CPR?
 - A. 10 seconds
 - B. 15 seconds
 - C. 30 seconds
 - D. 60 seconds
2. A 4-year-old child is brought to the emergency department for seizures. The seizures stopped a few minutes ago, but the child continues to have slow and irregular respirations. Which condition is most consistent with your assessment?
 - A. Disordered control of breathing
 - B. Lower airway obstruction
 - C. Lung tissue disease
 - D. Upper airway obstruction
3. An 8-year-old child is brought to the emergency department with a 2-day history of lethargy and polyuria. The child has new-onset rapid, deep, and labored breathing. Which diagnostic test should you order first?
 - A. 12-lead ECG
 - B. Arterial blood gases
 - C. Blood glucose
 - D. Serum potassium

Use this scenario to answer the next 2 questions:

After rectal administration of diazepam, an 8-year-old boy with a history of seizures is now unresponsive to painful stimulation. His respirations are shallow, at a rate of 10/min. His oxygen saturation is 94% on 2 L of nasal cannula oxygen. On examination, the child is snoring with poor chest rise and poor air entry bilaterally.

4. Which action should you take next?

- A. Administer naloxone
- B. Perform endotracheal intubation
- C. Apply hyponasal cannula
- D. Reposition the patient, and insert an oral airway

5. If the patient continues to deteriorate after your initial intervention, which next step is most appropriate?

- A. Apply nasal cannula
- B. Provide bag-mask ventilation
- C. Administer nebulized epinephrine
- D. Perform nasal suctioning

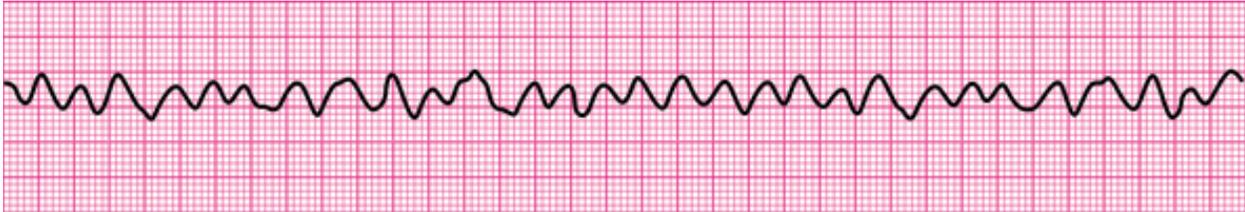
6. A 6-year-old child is found unresponsive, not breathing, and without a pulse. One healthcare worker leaves to activate the emergency response system and get the resuscitation equipment. You and another healthcare provider immediately begin performing CPR. Which compression-to-ventilation ratio do you use?

- A. 15:1
- B. 30:1
- C. 15:2
- D. 30:2

7. In postresuscitation management after cardiac arrest, extra care should be taken to avoid reperfusion injury. What should the ideal oxygen saturation range most likely be?

- A. 90% to 98%
- B. 94% to 99%
- C. 94% to 100%
- D. 98% to 100%

8. A 3-year-old child is in cardiac arrest, and high-quality CPR is in progress. You are the team leader. The first rhythm check reveals the rhythm shown here.



Defibrillation is attempted with a shock dose of 2 J/kg. After administration of the shock, what should you say to your team members?

- A. "Check for a pulse."
- B. "Give epinephrine 0.01 mg/kg."
- C. "Let's check the rhythm."
- D. "Resume compressions."

Use this scenario to answer the next 2 questions:

A 4-year-old child in cardiac arrest is brought to the emergency department by ambulance. High-quality CPR is being performed. The cardiac monitor displays the rhythm strip shown here. The estimated weight of the child is 20 kg.



9. Which dosage range should you use for initial defibrillation?
- A. 0.5 to 2 J/kg
 - B. 4 to 6 J/kg
 - C. 6 to 8 J/kg
 - D. 2 to 4 J/kg
10. As the team leader, how many joules do you tell your team member to use to perform initial defibrillation?
- A. 10 J
 - B. 40 J
 - C. 100 J
 - D. 140 J

11. You are the team leader during a pediatric resuscitation attempt. Which action is an element of high-quality CPR?
- A. Providing a compression depth of one fourth the depth of the chest
 - B. Providing a compression rate of 80 to 100/min
 - C. Allowing complete chest wall recoil after each compression
 - D. Performing pulse checks every minute

Use this scenario to answer the next 3 questions:

You are caring for a 3-month-old boy with a 2-day history of fever, vomiting, and diarrhea. His parents state that he has been sleeping much more. His heart rate is 190/min, temperature is 38.3°C (101°F), blood pressure is 59/29 mm Hg, respiratory rate is 70/min and shallow, and oxygen saturation is 94% on 100% oxygen. His capillary refill time is 4 to 5 seconds, and he has mottled, cool extremities. The infant weighs 6 kg.

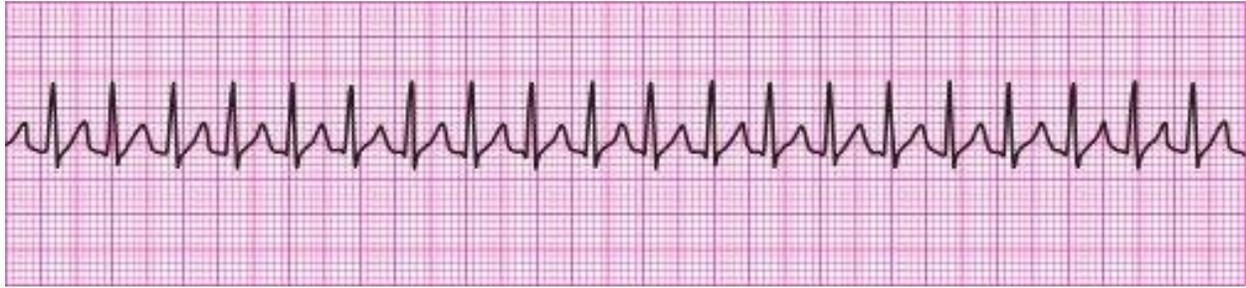
12. Which assessment finding indicates that the infant has hypotensive shock?
- A. Blood pressure
 - B. Capillary refill time
 - C. Heart rate
 - D. Tachypnea
13. On the basis of this infant's presentation, which type of shock does this infant have?
- A. Cardiogenic
 - B. Distributive
 - C. Hypovolemic
 - D. Obstructive
14. You have decided that this infant needs fluid resuscitation. How much fluid should you administer?
- A. 10 mL/kg lactated Ringer's
 - B. 15 mL/kg 5% dextrose in 0.45% normal saline
 - C. 20 mL/kg normal saline
 - D. 20 mL/kg 0.45% normal saline

15. A 2-week-old infant is being evaluated for irritability and poor feeding. His blood pressure is 55/40 mm Hg, and capillary refill time is 5 seconds. Which statement best describes your assessment of this infant's blood pressure?
- A. It represents compensated shock.
 - B. It is hypertensive.
 - C. It is hypotensive.
 - D. It is normal.

16. A team member is unable to perform an assigned task because it is beyond the team member's scope of practice. Which action should the team member take?
- A. Ask for a new task or role
 - B. Refuse to perform the task
 - C. Do it anyway
 - D. Seek expert consultation
17. Which abnormality helps identify children with acute respiratory distress caused by lung tissue disease?
- A. Crackles
 - B. Prolonged inspiratory time
 - C. Stridor
 - D. Wheezes
18. With which condition in a child should IO access most likely be attempted before vascular access?
- A. Cardiogenic shock due to poisoning
 - B. Nonhemorrhagic hypovolemic shock
 - C. Obstructive shock due to tension pneumothorax
 - D. Cardiac arrest
19. You respond to an infant who is unresponsive, is not breathing, and does not have a pulse. You shout for nearby help, but no one arrives. What action should you take next?
- A. Begin CPR for 2 minutes before leaving to activate the emergency response system
 - B. Begin CPR for 1 minute before leaving to activate the emergency response system
 - C. Activate the emergency response system after giving CPR for 10 minutes
 - D. Activate the emergency response system after giving CPR for 5 minutes

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy is pale and cool to the touch. His blood pressure is 70/45 mm Hg, heart rate is 190/min, and respiratory rate is 12/min. The SpO₂ is not detectable. Capillary refill time is 5 seconds. An IV is in place. The cardiac monitor displays the rhythm shown here.



20. Which rhythm is seen on the patient's cardiac monitor?

- A. Normal sinus rhythm
- B. Sinus tachycardia
- C. Supraventricular tachycardia
- D. Ventricular tachycardia

21. If initial treatment is unavailable or delayed, which intervention is indicated?

- A. Defibrillation
- B. 20 mL/kg bolus isotonic crystalloid
- C. High-quality CPR
- D. Synchronized cardioversion

22. You are performing the airway component of the primary assessment. Which finding would lead you to conclude that the child has an upper airway obstruction?

- A. Dry, nonproductive cough
- B. Inspiratory stridor
- C. Subcostal retractions
- D. Wheezing

23. A 3-year-old child is having difficulty breathing. Which finding would most likely lead you to suspect an upper airway obstruction in this child?

- A. Expiratory breath sounds
- B. Decreased expiratory effort
- C. Increased inspiratory effort with retractions
- D. Normal inspiratory sounds

24. You are caring for patients in the emergency department. Which 2-year-old child requires immediate intervention?
- A child who is grunting
 - A child with an SpO₂ of 95% on room air
 - A child with a systolic blood pressure of 92 mm Hg
 - A child with a temperature of 37.4°C (99.3°F)
25. You are evaluating a 10-year-old child who is febrile and tachycardic. The child's capillary refill time is 5 seconds. Which parameter will determine if the child is in compensated shock?
- Blood pressure
 - Chest movement
 - Respiratory effort
 - Respiratory rate
26. A 3-year-old child is brought to the emergency department by his mother. Which is a normal finding for a 3-year-old child?
- Blood pressure of 55/30 mm Hg
 - Heart rate of 220/min
 - Oxygen saturation of 90%
 - Respiratory rate of 24/min

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy was given a dose of rectal valium by his caretaker for a prolonged seizure. His blood pressure is 80/40 mm Hg, heart rate is 45/min, respiratory rate is 6/min, and SpO₂ is 60% on room air. He is unresponsive and cyanotic. The cardiac monitor displays the rhythm shown here.



27. Which rhythm is most consistent with this patient's presentation and ECG findings?
- Normal sinus rhythm
 - Second-degree heart block (Mobitz type II)
 - Sinus bradycardia
 - Pulseless electrical activity
28. Which action do you take next?
- Administer epinephrine IV
 - Perform transcutaneous pacing
 - Provide bag-mask ventilation with 100% oxygen
 - Perform endotracheal intubation

29. A 10-year-old child is being evaluated for a headache. Which is a normal finding for this 10-year-old child?
- A. Blood pressure of 60/50 mm Hg
 - B. Heart rate of 88/min
 - C. Respiratory rate of 8/min
 - D. Temperature of 39.6°C (103.2°F)
30. A 5-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. You are using the primary assessment to evaluate the child. When assessing the child's neurologic status, you note that he has spontaneous eye opening, is fully oriented, and is able to follow commands. How would you document this child's AVPU (Alert, Voice, Painful, Unresponsive) Pediatric Response Scale finding?
- A. Alert
 - B. Voice
 - C. Painful
 - D. Unresponsive
31. A 6-month-old infant is being evaluated for bradycardia. Which is the most likely cause of bradycardia?
- A. Hypovolemia
 - B. Hypoxia
 - C. Drug toxicity
 - D. Hyperglycemia

Use this scenario to answer the next 2 questions:

You are caring for a 5-year-old boy with a 4-day history of high fever and cough. He is having increasing lethargy, grunting, and sleepiness. Now he is difficult to arouse and is unresponsive to voice commands. His oxygen saturation is 72% on room air and 89% when on a nonrebreathing oxygen mask. He has shallow respirations, with a respiratory rate of 38/min. Auscultation of the lungs reveals bilateral crackles.

32. Which assessment finding is consistent with respiratory failure in this child?
- A. Cough
 - B. Fever
 - C. Oxygen saturation
 - D. Respiratory rate
33. Which medication would be most appropriate?
- A. A bronchodilator
 - B. An antibiotic
 - C. A corticosteroid
 - D. A vasopressor

34. What ratio for compressions to breaths should be used for 1-rescuer infant CPR?
- A. Give 30 compressions to 2 breaths
 - B. Give 5 compressions to 1 breath
 - C. Give 20 compressions to 2 breaths
 - D. Give 15 compressions to 2 breaths
35. An 8-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. Which finding would suggest that immediate intervention is needed?
- A. Decreased level of consciousness
 - B. Systolic blood pressure of 106 mm Hg
 - C. Temperature of 38.1°C (100.5°F)
 - D. Warm, moist skin

Use this scenario to answer the next 2 questions:

You are caring for a 9-month-old girl who has increased work of breathing, a fever, and a cough. On assessment, you find an alert infant with stridor and retractions. The infant's SpO₂ is 94%. On auscultation, the lungs are clear bilaterally.

36. Which is the most likely cause of this infant's respiratory distress?
- A. Disordered control of breathing
 - B. Lower airway obstruction
 - C. Parenchymal lung disease
 - D. Upper airway obstruction
37. Which medication should you administer first?
- A. Albuterol, nebulized
 - B. Ceftriaxone, IV
 - C. Dexamethasone, PO/IM
 - D. Epinephrine, nebulized
38. Which condition is characterized by a prolonged expiratory phase and wheezing?
- A. Disordered control of breathing
 - B. Hypovolemic shock
 - C. Lower airway obstruction
 - D. Upper airway obstruction
39. During a resuscitation attempt, the team leader asks you to administer an initial dose of epinephrine at 0.1 mg/kg to be given IO. How should you respond?
- A. "I can't administer the drug at the dose you ordered."
 - B. "OK, but I will administer epinephrine 0.01 mg/kg."
 - C. "OK. I will administer epinephrine 0.1 mg/kg."
 - D. "I think the correct dose is 0.01 mg/kg. Should I give that dose instead?"

Use this scenario to answer the next 4 questions:

You are caring for a 12-year-old girl with acute lymphoblastic leukemia. She is responsive, but she does not feel well and appears to be flushed. Her temperature is 39°C (102.2°F), heart rate is 118/min, respiratory rate is 36/min, blood pressure is 100/40 mm Hg, and oxygen saturation is 96% on room air. Your assessment reveals mild increase in work of breathing and bounding pulses. The child is receiving 100% oxygen by nonrebreathing mask.

40. Laboratory studies document a lactic acidosis. On the basis of the patient's clinical assessment and history, which type of shock does this patient most likely have?
- A. Cardiogenic
 - B. Distributive, neurogenic
 - C. Distributive, septic
 - D. Obstructive
41. Which assessment finding is most important in your determination of the severity of the patient's condition?
- A. Blood pressure
 - B. Heart rate
 - C. Oxygen saturation
 - D. Respiratory rate
42. Which normal saline fluid bolus is most appropriate for this patient?
- A. 10 mL/kg
 - B. 15 mL/kg
 - C. 20 mL/kg
 - D. 30 mL/kg
43. In addition to oxygen administration and appropriate fluid resuscitation, which additional early intervention should you provide to this patient?
- A. Bronchodilator administration
 - B. Antibiotic administration
 - C. Corticosteroid administration
 - D. Glucose administration
44. A 3-year-old boy is brought to the emergency department by his mother. He is lethargic, with retractions and nasal flaring. He has a respiratory rate of 70/min, with warm extremities and brisk capillary refill. To which immediate life-threatening condition could this child's condition most likely progress if left untreated?
- A. Cardiogenic shock
 - B. Hypovolemic shock
 - C. Respiratory distress
 - D. Respiratory failure

45. A 6-year-old boy is being evaluated for difficulty breathing. Which finding would suggest this child has respiratory distress?
- A. Audible inspiratory stridor
 - B. Decreased respiratory effort
 - C. Oxygen saturation of 95%
 - D. Respiratory rate of 8/min
46. An 8-year-old child is brought to the emergency department by his mother for difficulty breathing. He has a history of asthma and nut allergies. His mother tells you that he recently ate a cookie at a family picnic. Which condition is most likely to be present in this child?
- A. Disordered control of breathing
 - B. Hypovolemic shock
 - C. Lung tissue disease
 - D. Upper airway obstruction
47. A 10-year-old child is brought to the emergency department for fever and cough. You obtain an oxygen saturation on the child. Which oxygen saturation would indicate that immediate intervention is needed?
- A. 88% on 4 L of nasal oxygen
 - B. 95% on room air
 - C. 96% on room air
 - D. 97% on 50% oxygen
48. You are evaluating a 1-year-old child for respiratory distress. His heart rate is 168/min, and his respiratory rate has decreased from 65/min to 30/min. He now appears more lethargic and continues to have severe subcostal retractions. On the basis of your assessment, which is the most likely reason for this change in the child's condition?
- A. The child has a neurologic problem rather than a respiratory problem.
 - B. The child has signs of probable respiratory failure.
 - C. The child likely has an arrhythmia rather than a respiratory problem.
 - D. The child's status is improving.
49. The parents of a 7-year-old child who is undergoing chemotherapy report that the child has been febrile and has not been feeling well, with recent onset of lethargy. Assessment reveals that the child is difficult to arouse and her skin color is pale. The child's heart rate is 160/min, respiratory rate is 38/min, blood pressure is 76/45 mm Hg, capillary refill time is 5 to 6 seconds, and temperature is 39.4°C (103°F). IV access has been established, and blood cultures have been obtained. Which action should you perform next?
- A. Administer 20 mL/kg of isotonic crystalloid over 5 to 10 minutes
 - B. Administer 20 mL/kg of isotonic crystalloid over 30 minutes
 - C. Administer 10 mL/kg of packed red blood cells
 - D. Obtain a chest x-ray

50. A 7-year-old child in cardiac arrest is brought to the emergency department by ambulance. No palpable pulses are detected. The child's ECG is shown here.



How would you characterize this child's rhythm?

- A. Pulseless electrical activity
- B. Sinus bradycardia
- C. Ventricular escape rhythm
- D. Ventricular tachycardia

**Answer Key
Pediatric Advanced Life Support Exam A**

| Question | Answer | | | |
|----------|--------|---|---|---|
| 1. | • | B | C | D |
| 2. | • | B | C | D |
| 3. | A | B | • | D |
| 4. | A | B | C | • |
| 5. | A | • | C | D |
| 6. | A | B | • | D |
| 7. | A | • | C | D |
| 8. | A | B | C | • |
| 9. | A | B | C | • |
| 10. | A | • | C | D |
| 11. | A | B | • | D |
| 12. | • | B | C | D |
| 13. | A | B | • | D |
| 14. | A | B | • | D |
| 15. | A | B | • | D |
| 16. | • | B | C | D |
| 17. | • | B | C | D |
| 18. | A | B | C | • |
| 19. | • | B | C | D |
| 20. | A | B | • | D |
| 21. | A | B | C | • |
| 22. | A | • | C | D |
| 23. | A | B | • | D |
| 24. | • | B | C | D |
| 25. | • | B | C | D |

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| 26. | A | B | C | • |
| 27. | A | B | • | D |
| 28. | A | B | • | D |
| 29. | A | • | C | D |
| 30. | • | B | C | D |
| 31. | A | • | C | D |
| 32. | A | B | • | D |
| 33. | A | • | C | D |
| 34. | • | B | C | D |
| 35. | • | B | C | D |
| 36. | A | B | C | • |
| 37. | A | B | C | • |
| 38. | A | B | • | D |
| 39. | A | B | C | • |
| 40. | A | B | • | D |
| 41. | • | B | C | D |
| 42. | A | B | • | D |
| 43. | A | • | C | D |
| 44. | A | B | C | • |
| 45. | • | B | C | D |
| 46. | A | B | C | • |
| 47. | • | B | C | D |
| 48. | A | • | C | D |
| 49. | • | B | C | D |
| 50. | • | B | C | D |

Annotated Answer Key Pediatric Advanced Life Support Exam A

Provider Manual page numbers below refer to the printed book and the eBook as viewed through the offline desktop/laptop reader, not the eBook as viewed through the mobile apps or ebooks.heart.org.

1. A 6-month-old infant is unresponsive. You begin checking for breathing at the same time you check for the infant's pulse. Which is the maximum time you should spend when trying to simultaneously check for breathing and palpate the infant's pulse before starting CPR?

- A. 10 seconds**
- B. 15 seconds
- C. 30 seconds
- D. 60 seconds

The correct answer is A. To minimize delay in starting CPR, you may assess breathing at the same time as you check the pulse. This should take no more than 10 seconds. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > Infant and Child 1-Rescuer BLS Sequence > Assess for Breathing and Pulse (Box 3); page 17]

2. A 4-year-old child is brought to the emergency department for seizures. The seizures stopped a few minutes ago, but the child continues to have slow and irregular respirations. Which condition is most consistent with your assessment?

- A. Disordered control of breathing**
- B. Lower airway obstruction
- C. Lung tissue disease
- D. Upper airway obstruction

The correct answer is A. Disordered control of breathing may result from a host of conditions, including neurologic disorders (eg, seizures, central nervous system infections, head injury, brain tumor, hydrocephalus, neuromuscular disease), metabolic abnormalities, and drug overdose. Because disordered control of breathing is typically associated with conditions that impair neurologic function, these children often have a decreased level of consciousness. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Disordered Control of Breathing > Causes of Disordered Control of Breathing; page 126]

3. An 8-year-old child is brought to the emergency department with a 2-day history of lethargy and polyuria. The child has new-onset rapid, deep, and labored breathing. Which diagnostic test should you order first?

- A. 12-lead ECG
- B. Arterial blood gases
- C. Blood glucose**
- D. Serum potassium

The correct answer is C. In a pediatric patient with altered mental status, hypoglycemia should be considered and blood glucose evaluated as soon as possible. *Altered mental status* refers to the range of mental states from agitation to coma. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Disability > AVPU Pediatric Response Scale; page 56]

Use this scenario to answer the next 2 questions:

After rectal administration of diazepam, an 8-year-old boy with a history of seizures is now unresponsive to painful stimulation. His respirations are shallow, at a rate of 10/min. His oxygen saturation is 94% on 2 L of nasal cannula oxygen. On examination, the child is snoring with poor chest rise and poor air entry bilaterally.

4. Which action should you take next?

- A. Administer naloxone
- B. Perform endotracheal intubation
- C. Apply hyponasal cannula
- D. Reposition the patient, and insert an oral airway**

The correct answer is D. Support of airway and ventilation is the main therapeutic intervention for management of respiratory distress or failure caused by poisoning or drug overdose. [*PALS Provider Manual*, Part 7: Management of Respiratory Distress and Failure > Management of Disordered Control of Breathing > Specific Management of Disordered Control of Breathing by Etiology > Management of Respiratory Distress/Failure in Poisoning or Drug Overdose; page 144]

5. If the patient continues to deteriorate after your initial intervention, which next step is most appropriate?

- A. Apply nasal cannula
- B. Provide bag-mask ventilation**
- C. Administer nebulized epinephrine
- D. Perform nasal suctioning

The correct answer is B. Bag-mask ventilation can provide adequate oxygenation and ventilation for a child with no breathing or inadequate breathing despite an open/patent airway. Signs of inadequate breathing are apnea, abnormal respiratory rate, inadequate breath sounds, and hypoxemia despite supplementary oxygen. [*PALS Provider Manual*, Resources for Management of Respiratory Emergencies > Bag-Mask Ventilation > Overview; page 147]

6. A 6-year-old child is found unresponsive, not breathing, and without a pulse. One healthcare worker leaves to activate the emergency response system and get the resuscitation equipment. You and another healthcare provider immediately begin performing CPR. Which compression-to-ventilation ratio do you use?

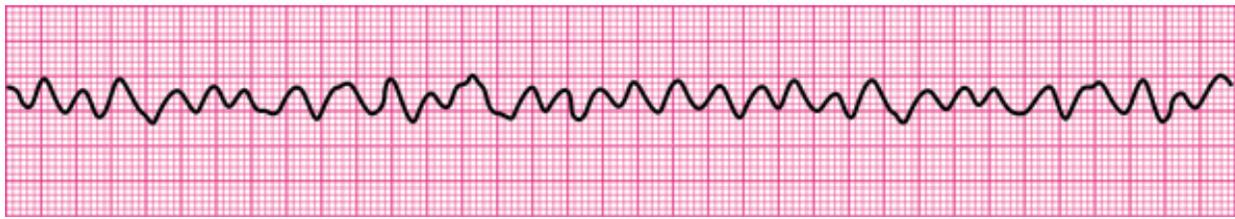
- A. 15:1
- B. 30:1
- C. 15:2**
- D. 30:2

The correct answer is C. If 2 rescuers are present for the resuscitation attempt of an infant or a child, use a compression-to-ventilation ratio of 15:2. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > BLS for Infants and Children > Infant/Child Chest Compressions > Compression Rate and Compression-to-Ventilation Ratio; page 20]

7. In postresuscitation management after cardiac arrest, extra care should be taken to avoid reperfusion injury. What should the ideal oxygen saturation range most likely be?
- A. 90% to 98%
 - B. 94% to 99%
 - C. 94% to 100%
 - D. 98% to 100%

The correct answer is B. After return of spontaneous circulation (ROSC), it may be reasonable for rescuers to titrate oxygen administration to achieve normoxemia, which is an oxygen saturation of 94% or above. When possible, oxygen should be weaned to target an oxyhemoglobin saturation within the range of 94% to 99%. The goal should be to strictly avoid hypoxemia. [*PALS Provider Manual*, Part 1: Course Overview > Science Update > Post-Cardiac Arrest PaO₂ and PaCO₂; page 14]

8. A 3-year-old child is in cardiac arrest, and high-quality CPR is in progress. You are the team leader. The first rhythm check reveals the rhythm shown here.



Defibrillation is attempted with a shock dose of 2 J/kg. After administration of the shock, what should you say to your team members?

- A. "Check for a pulse."
- B. "Give epinephrine 0.01 mg/kg."
- C. "Let's check the rhythm."
- D. "Resume compressions."

The correct answer is D. When attempting defibrillation, provide compressions until the defibrillator is charged, deliver 1 shock, and immediately resume CPR, starting with chest compressions. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > PALS in Cardiac Arrest > Defibrillation; page 85]

Use this scenario to answer the next 2 questions:

A 4-year-old child in cardiac arrest is brought to the emergency department by ambulance. High-quality CPR is being performed. The cardiac monitor displays the rhythm strip shown here. The estimated weight of the child is 20 kg.



9. Which dosage range should you use for initial defibrillation?

- A. 0.5 to 2 J/kg
- B. 4 to 6 J/kg
- C. 6 to 8 J/kg
- D. 2 to 4 J/kg**

The correct answer is D. For manual defibrillation, an initial dose of 2 to 4 J/kg is acceptable, and for ease of teaching, a 2 J/kg (biphasic or monophasic waveform) may be considered. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > Pediatric Cardiac Arrest Algorithm > Shockable Rhythm: VF/pVT (Step 2); page 90]

10. As the team leader, how many joules do you tell your team member to use to perform initial defibrillation?

- A. 10 J
- B. 40 J**
- C. 100 J
- D. 140 J

The correct answer is B. For manual defibrillation, an initial dose of 2 to 4 J/kg is acceptable. Because the estimated weight of the child is 20 kg (2 J × 20 kg), 40 J should be used. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > Pediatric Cardiac Arrest Algorithm > Shockable Rhythm: VF/pVT (Step 2); page 90]

11. You are the team leader during a pediatric resuscitation attempt. Which action is an element of high-quality CPR?
- A. Providing a compression depth of one fourth the depth of the chest
 - B. Providing a compression rate of 80 to 100/min
 - C. Allowing complete chest wall recoil after each compression
 - D. Performing pulse checks every minute

The correct answer is C. During CPR, push fast (100 to 120 compressions/min), push hard (at least one third the depth of the anteroposterior diameter of the chest or about 2 inches in the child or about 1½ inches in an infant), allow complete chest recoil after each compression, minimize interruptions in chest compressions, and avoid excessive ventilation. [*PALS Provider Manual*, Part 11: Management of Arrhythmias > Management: Pediatric Bradycardia With a Pulse and Poor Perfusion > If Bradycardia and Cardiopulmonary Compromise Persist, Perform CPR (Box 3) > Foundational Facts: Perform High-Quality CPR; page 256]

Use this scenario to answer the next 3 questions:

You are caring for a 3-month-old boy with a 2-day history of fever, vomiting, and diarrhea. His parents state that he has been sleeping much more. His heart rate is 190/min, temperature is 38.3°C (101°F), blood pressure is 59/29 mm Hg, respiratory rate is 70/min and shallow, and oxygen saturation is 94% on 100% oxygen. His capillary refill time is 4 to 5 seconds, and he has mottled, cool extremities. The infant weighs 6 kg.

12. Which assessment finding indicates that the infant has hypotensive shock?
- A. Blood pressure
 - B. Capillary refill time
 - C. Heart rate
 - D. Tachypnea

The correct answer is A. Hypotensive (decompensated) shock can result from many causes and is characterized by evidence of impaired perfusion that will rapidly progress to cardiac arrest if not corrected. Signs include abnormal clinical appearance and evidence of severely impaired perfusion (ie, absent distal pulses and weak central pulses, cool extremities, mottled skin, or altered level of consciousness). Hypotension is a late finding in most types of shock and may signal impending cardiac arrest. Hypotension can occur early in septic shock because mediators of sepsis produce vasodilation and reduce systemic vascular resistance. In this setting, the child may initially appear to have warm extremities, brisk capillary refill, and full peripheral pulses despite hypotension. [*PALS Provider Manual*, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure) > Hypotensive Shock; page 178]

13. On the basis of this infant's presentation, which type of shock does this infant have?

- A. Cardiogenic
- B. Distributive
- C. Hypovolemic
- D. Obstructive

The correct answer is C. Hypovolemic shock refers to a clinical state of reduced intravascular volume. It is the most common type of shock in pediatric patients. It can be caused by extravascular fluid loss (eg, diarrhea, dehydration) or intravascular volume loss (eg, hemorrhage) and results in decreased preload and cardiac output. Hypovolemic shock is the result of an absolute deficiency of intravascular blood volume, but, in fact, it typically represents depletion of both intravascular and extravascular fluid volume. As a result, adequate fluid resuscitation often requires administration of fluid boluses that exceed the volume of the estimated intravascular deficit. [*PALS Provider Manual*, Part 8: Recognition of Shock > Identification of Shock by Type > Hypovolemic Shock; page 180]

14. You have decided that this infant needs fluid resuscitation. How much fluid should you administer?

- A. 10 mL/kg lactated Ringer's
- B. 15 mL/kg 5% dextrose in 0.45% normal saline
- C. 20 mL/kg normal saline
- D. 20 mL/kg 0.45% normal saline

The correct answer is C. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

15. A 2-week-old infant is being evaluated for irritability and poor feeding. His blood pressure is 55/40 mm Hg, and capillary refill time is 5 seconds. Which statement best describes your assessment of this infant's blood pressure?

- A. It represents compensated shock.
- B. It is hypertensive.
- C. It is hypotensive.
- D. It is normal.

The correct answer is C. The normal blood pressure for a 2-week-old infant should be within the systolic range of 67-84 mm Hg and a diastolic range of 35-53 mm Hg. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Blood Pressure; page 53]

16. A team member is unable to perform an assigned task because it is beyond the team member's scope of practice. Which action should the team member take?

- A. Ask for a new task or role
- B. Refuse to perform the task
- C. Do it anyway
- D. Seek expert consultation

The correct answer is A. Not only should everyone on the team know his or her own limitations and capabilities, but the team leader should also be aware of them. This allows the team leader to evaluate team resources and call for backup of team members when assistance is needed. High-performance team members should anticipate situations in which they might require assistance and inform the team leader. [*PALS Provider Manual*, Part 5: Effective Resuscitation Team Dynamics > Roles of the Team Leader and Team Members > Roles > Knowing Your Limitations; page 107]

17. Which abnormality helps identify children with acute respiratory distress caused by lung tissue disease?

- A. Crackles
- B. Prolonged inspiratory time
- C. Stridor
- D. Wheezes

The correct answer is A. Signs of lung tissue disease include tachypnea, increased respiratory effort, grunting, crackles, diminished breath sounds, tachycardia, and hypoxemia. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Lung Tissue Disease > Signs of Lung Tissue Disease; page 126]

18. With which condition in a child should IO access most likely be attempted before vascular access?

- A. Cardiogenic shock due to poisoning
- B. Nonhemorrhagic hypovolemic shock
- C. Obstructive shock due to tension pneumothorax
- D. Cardiac arrest

The correct answer is D. Intraosseous (IO) cannulation is a relatively simple and effective method of rapidly establishing vascular access for emergency fluids or medications. It provides access to a noncollapsible marrow venous plexus, which serves as a rapid, safe, and reliable route for administration of drugs, crystalloids, colloids, and blood during resuscitation. IO access can be achieved in children of all ages, often in about 30 to 60 seconds. In certain circumstances (eg, cardiac arrest or severe shock with severe vasoconstriction), it may be the initial vascular access attempted. [*PALS Provider Manual*, Resources for Management of Circulatory Emergencies > Intraosseous Access; page 235]

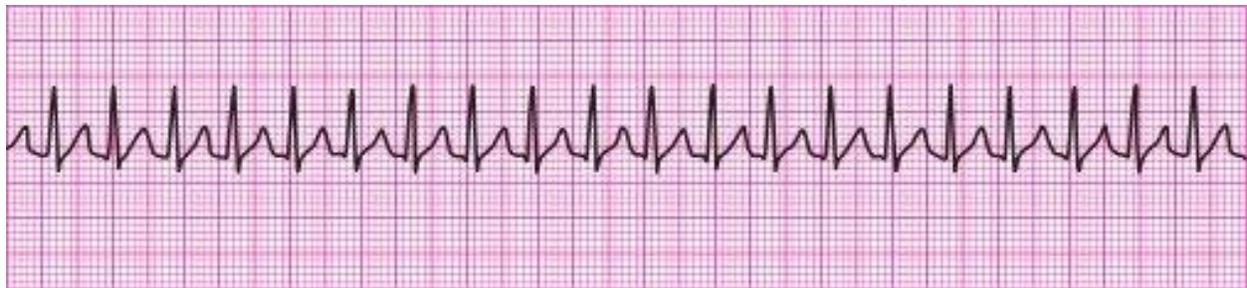
19. You respond to an infant who is unresponsive, is not breathing, and does not have a pulse. You shout for nearby help, but no one arrives. What action should you take next?

- A. Begin CPR for 2 minutes before leaving to activate the emergency response system
- B. Begin CPR for 1 minute before leaving to activate the emergency response system
- C. Activate the emergency response system after giving CPR for 10 minutes
- D. Activate the emergency response system after giving CPR for 5 minutes

The correct answer is A. If the victim is not breathing normally or is only gasping and has no pulse, begin high-quality CPR for 2 minutes before activating the emergency response system. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > Infant and Child 1-Rescuer BLS Sequence > Determine Next Actions; page 19]

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy is pale and cool to the touch. His blood pressure is 70/45 mm Hg, heart rate is 190/min, and respiratory rate is 12/min. The SpO₂ is not detectable. Capillary refill time is 5 seconds. An IV is in place. The cardiac monitor displays the rhythm shown here.



20. Which rhythm is seen on the patient's cardiac monitor?

- A. Normal sinus rhythm
- B. Sinus tachycardia
- C. Supraventricular tachycardia
- D. Ventricular tachycardia

The correct answer is C. This ECG rhythm strip shows supraventricular tachycardia. Note that the QRS complexes are narrow and regular, the rate is very fast (ie, greater than 200/min), and P waves are not obvious. [*PALS Provider Manual*, Appendix > Rhythm Recognition Review > Rhythm Strip 8; page 313]

21. If initial treatment is unavailable or delayed, which intervention is indicated?

- A. Defibrillation
- B. 20 mL/kg bolus isotonic crystalloid
- C. High-quality CPR
- D. Synchronized cardioversion

The correct answer is D. If initial treatment with adenosine is unavailable (or delayed), synchronized cardioversion (with an initial dose of 0.5 to 1 J/kg) is indicated. [*PALS Provider Manual*, Part 11: Management of Arrhythmias; Pediatric Tachycardia With a Pulse and Poor Perfusion Algorithm; page 272]

22. You are performing the airway component of the primary assessment. Which finding would lead you to conclude that the child has an upper airway obstruction?

- A. Dry, nonproductive cough
- B. Inspiratory stridor**
- C. Subcostal retractions
- D. Wheezing

The correct answer is B. Stridor is a coarse, usually higher-pitched breathing sound typically heard on inspiration. It also may be heard during both inspiration and expiration. Stridor is a sign of upper airway (extrathoracic) obstruction and may indicate that the obstruction is critical and requires immediate intervention. There are many causes of stridor, such as a foreign body in the airway and infection (eg, croup). [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Lung and Airway Sounds; page 44*]

23. A 3-year-old child is having difficulty breathing. Which finding would most likely lead you to suspect an upper airway obstruction in this child?

- A. Expiratory breath sounds
- B. Decreased expiratory effort
- C. Increased inspiratory effort with retractions**
- D. Normal inspiratory sounds

The correct answer is C. The major clinical signs typically occur during the inspiratory phase of the respiratory cycle, such as stridor, hoarseness, or a change in voice or cry. Inspiratory retractions, use of accessory muscles, and nasal flaring are often present. The respiratory rate is often only mildly elevated, as upper airway obstruction is worse with faster breathing. Examples include foreign body obstruction, croup, and epiglottitis. [*PALS Provider Manual, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Signs of Upper Airway Obstruction; page 124*]

24. You are caring for patients in the emergency department. Which 2-year-old child requires immediate intervention?

- A. A child who is grunting**
- B. A child with an SpO₂ of 95% on room air
- C. A child with a systolic blood pressure of 92 mm Hg
- D. A child with a temperature of 37.4°C (99.3°F)

The correct answer is A. Grunting produces early glottic closure during expiration. Grunting is a compensatory mechanism to maintain positive airway pressure and prevent collapse of the alveoli and small airways. Grunting is a serious sign and may indicate respiratory distress or respiratory failure. [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Increased Respiratory Effort; page 41*]

25. You are evaluating a 10-year-old child who is febrile and tachycardic. The child's capillary refill time is 5 seconds. Which parameter will determine if the child is in compensated shock?

- A. Blood pressure
- B. Chest movement
- C. Respiratory effort
- D. Respiratory rate

The correct answer is A. Compensated shock refers to a clinical state in which there are clinical signs of inadequate tissue perfusion, but the patient's blood pressure is in the normal range. In this stage of shock, the body is able to maintain blood pressure despite impaired delivery of oxygen and nutrients to the vital organs. Clinical findings include tachycardia, delayed capillary refill, and decreased urine output. [*PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure) > Compensated Shock; page 177*]

26. A 3-year-old child is brought to the emergency department by his mother. Which is a normal finding for a 3-year-old child?

- A. Blood pressure of 55/30 mm Hg
- B. Heart rate of 220/min
- C. Oxygen saturation of 90%
- D. Respiratory rate of 24/min

The correct answer is D. The normal respiratory rate for a 3-year-old child is between 22 and 37 breaths per minute. [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Normal Respiratory Rate; page 39*]

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy was given a dose of rectal valium by his caretaker for a prolonged seizure. His blood pressure is 80/40 mm Hg, heart rate is 45/min, respiratory rate is 6/min, and SpO₂ is 60% on room air. He is unresponsive and cyanotic. The cardiac monitor displays the rhythm shown here.



27. Which rhythm is most consistent with this patient's presentation and ECG findings?

- A. Normal sinus rhythm
- B. Second-degree heart block (Mobitz type II)
- C. Sinus bradycardia
- D. Pulseless electrical activity

The correct answer is C. Sinus bradycardia is a sinus node depolarization rate that is slower than normal for the child's age. Sinus bradycardia is not necessarily problematic. It is often present in healthy children at rest when metabolic demands of the body are relatively low (eg, during sleep). Well-conditioned athletes often have sinus bradycardia because they have high stroke volume and increased vagal tone. However, sinus bradycardia can also develop in response to hypoxia, hypotension, and acidosis. Sinus bradycardia also may result from drug effects. Therefore, evaluation of sinus bradycardia always must involve assessment of the clinical status of the child. Note the slow heart rate (45/min) compared with the normal heart rate for age and narrow QRS complex. [*PALS Provider Manual*, Part 10: Recognition of Arrhythmias > Recognition of Bradycardia > Types of Bradyarrhythmias > Sinus Bradycardia; page 241]

28. Which action do you take next?

- A. Administer epinephrine IV
- B. Perform transcutaneous pacing
- C. Provide bag-mask ventilation with 100% oxygen
- D. Perform endotracheal intubation

The correct answer is C. The next action that should be taken is to immediately provide bag-mask ventilation with 100% oxygen. [*PALS Provider Manual*, Part 11: Management of Arrhythmias > Pediatric Bradycardia With a Pulse and Poor Perfusion Algorithm; page 254]

29. A 10-year-old child is being evaluated for a headache. Which is a normal finding for this 10-year-old child?
- A. Blood pressure of 60/50 mm Hg
 - B. Heart rate of 88/min**
 - C. Respiratory rate of 8/min
 - D. Temperature of 39.6°C (103.2°F)

The correct answer is B. The normal heart rate for a school-age child is between 75 and 118/min. [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Heart Rate and Rhythm; page 48*]

30. A 5-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. You are using the primary assessment to evaluate the child. When assessing the child's neurologic status, you note that he has spontaneous eye opening, is fully oriented, and is able to follow commands. How would you document this child's AVPU (Alert, Voice, Painful, Unresponsive) Pediatric Response Scale finding?

- A. Alert**
- B. Voice
- C. Painful
- D. Unresponsive

The correct answer is A. To rapidly evaluate cerebral cortex function, use the AVPU Pediatric Response Scale. This scale is a system for rating a child's level of consciousness, an indicator of cerebral cortex function and consists of 4 ratings: Alert, Voice, Painful, and Unresponsive. Alert indicates the child is awake, active, and appropriately responsive to caregivers and external stimuli. "Appropriate response" is assessed in terms of the anticipated response based on the child's age and/or developmental level and the setting or situation. [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Disability > AVPU Pediatric Response Scale; page 55*]

31. A 6-month-old infant is being evaluated for bradycardia. Which is the most likely cause of bradycardia?
- A. Hypovolemia
 - B. Hypoxia**
 - C. Drug toxicity
 - D. Hyperglycemia

The correct answer is B. Bradycardia is a heart rate slower than normal for a child's age and clinical condition. Slight bradycardia may be normal in athletic children, but a very slow rate in a child with other symptoms is a worrisome sign and may indicate that cardiac arrest is imminent. Hypoxia is the most common cause of bradycardia in children. [*PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Heart Rate and Rhythm; page 48*]

Use this scenario to answer the next 2 questions:

You are caring for a 5-year-old boy with a 4-day history of high fever and cough. He is having increasing lethargy, grunting, and sleepiness. Now he is difficult to arouse and is unresponsive to voice commands. His oxygen saturation is 72% on room air and 89% when on a nonrebreathing oxygen mask. He has shallow respirations, with a respiratory rate of 38/min. Auscultation of the lungs reveals bilateral crackles.

32. Which assessment finding is consistent with respiratory failure in this child?

- A. Cough
- B. Fever
- C. Oxygen saturation
- D. Respiratory rate

The correct answer is C. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

33. Which medication would be most appropriate?

- A. A bronchodilator
- B. An antibiotic
- C. A corticosteroid
- D. A vasopressor

The correct answer is B. Identify the presence of fever, which may indicate infection and early need for antibiotics (eg, sepsis). [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Exposure; page 59]

34. What ratio for compressions to breaths should be used for 1-rescuer infant CPR?

- A. Give 30 compressions to 2 breaths
- B. Give 5 compressions to 1 breath
- C. Give 20 compressions to 2 breaths
- D. Give 15 compressions to 2 breaths

The correct answer is A. The universal rate for compressions in all cardiac arrest victims is 100 to 120/min. The compression-to-ventilation ratio for single rescuers is the same (30:2) in adults, children, and infants. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > BLS for Infants and Children > Infant/Child Chest Compressions > Compression Rate and Compression-to-Ventilation Ratio; page 20]

35. An 8-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. Which finding would suggest that immediate intervention is needed?

- A. Decreased level of consciousness
- B. Systolic blood pressure of 106 mm Hg
- C. Temperature of 38.1°C (100.5°F)
- D. Warm, moist skin

The correct answer is A. Signs of a life-threatening condition that would require immediate intervention include complete or severe airway obstruction (Airway); apnea, significant increased work of breathing, or bradypnea (Breathing); weak or absent pulses, poor perfusion, hypotension, or bradycardia (Circulation); unresponsiveness or decreased level of consciousness (Disability); and significant hypothermia, significant bleeding, petechiae, or purpura consistent with septic shock or coagulation problem (Exposure). [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Life-Threatening Problems; page 71]

Use this scenario to answer the next 2 questions:

You are caring for a 9-month-old girl who has increased work of breathing, a fever, and a cough. On assessment, you find an alert infant with stridor and retractions. The infant's SpO₂ is 94%. On auscultation, the lungs are clear bilaterally.

36. Which is the most likely cause of this infant's respiratory distress?

- A. Disordered control of breathing
- B. Lower airway obstruction
- C. Parenchymal lung disease
- D. Upper airway obstruction

The correct answer is D. The major clinical signs typically occur during the inspiratory phase of the respiratory cycle, such as stridor, hoarseness, or a change in voice or cry. Inspiratory retractions, use of accessory muscles, and nasal flaring are often present. The respiratory rate is often only mildly elevated, as upper airway obstruction is worse with faster breathing. Examples include foreign body obstruction, croup, and epiglottitis. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Signs of Upper Airway Obstruction; page 124]

37. Which medication should you administer first?

- A. Albuterol, nebulized
- B. Ceftriaxone, IV
- C. Dexamethasone, PO/IM
- D. Epinephrine, nebulized

The correct answer is D. Suctioning is helpful in removing secretions, blood, or debris; however, if the upper airway obstruction is caused by edema from infection (eg, croup) or allergic reaction, carefully weigh potential benefits vs risks of suctioning. Suctioning may increase the child's agitation and may increase respiratory distress. Instead, consider allowing the child to assume a position of comfort. Give nebulized epinephrine, particularly if the swelling is beyond the tongue. [*PALS Provider Manual*, Part 7: Management of Respiratory Distress and Failure > Management of Upper Airway Obstruction > General Management of Upper Airway Obstruction; page 132]

38. Which condition is characterized by a prolonged expiratory phase and wheezing?

- A. Disordered control of breathing
- B. Hypovolemic shock
- C. Lower airway obstruction
- D. Upper airway obstruction

The correct answer is C. Obstruction of the lower airways (ie, the airways within the thorax) can occur in the lower trachea, the bronchi, or the bronchioles. The major clinical signs typically occur during the expiratory phase of the respiratory cycle. The child often has wheezing and a prolonged expiratory phase requiring increased expiratory effort. The respiratory rate is usually elevated, particularly in infants. Inspiratory retractions become prominent when the lower airway obstruction impairs inspiration and exhalation, requiring increased respiratory effort. Examples include asthma and bronchiolitis. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Lower Airway Obstruction; page 124, and Signs of Lower Airway Obstruction; page 125]

39. During a resuscitation attempt, the team leader asks you to administer an initial dose of epinephrine at 0.1 mg/kg to be given IO. How should you respond?

- A. "I can't administer the drug at the dose you ordered."
- B. "OK, but I will administer epinephrine 0.01 mg/kg."
- C. "OK. I will administer epinephrine 0.1 mg/kg."
- D. "I think the correct dose is 0.01 mg/kg. Should I give that dose instead?"

The correct answer is D. During a resuscitation attempt, the leader or a member of a high-performance team may need to intervene if an action that is about to occur may be inappropriate at the time. Although constructive intervention is necessary, it should be tactful. Team leaders should avoid confrontation with team members. Instead, conduct a debriefing afterward if constructive criticism is needed. [*PALS Provider Manual*, Part 5: Effective Resuscitation Team Dynamics > Roles of the Team Leader and Team Members > Roles > Constructive Interventions; page 108]

Use this scenario to answer the next 4 questions:

You are caring for a 12-year-old girl with acute lymphoblastic leukemia. She is responsive, but she does not feel well and appears to be flushed. Her temperature is 39°C (102.2°F), heart rate is 118/min, respiratory rate is 36/min, blood pressure is 100/40 mm Hg, and oxygen saturation is 96% on room air. Your assessment reveals mild increase in work of breathing and bounding pulses. The child is receiving 100% oxygen by nonrebreathing mask.

40. Laboratory studies document a lactic acidosis. On the basis of the patient's clinical assessment and history, which type of shock does this patient most likely have?
- A. Cardiogenic
 - B. Distributive, neurogenic
 - C. Distributive, septic
 - D. Obstructive

The correct answer is C. Distributive shock caused by sepsis is characterized by reduced or increased systemic vascular resistance resulting in maldistribution of blood flow. The vasodilation and venodilation causes pooling of blood in the venous system and a relative hypovolemia. Septic shock also causes increased capillary permeability, so there is loss of plasma from the vascular space. This increases the severity of the hypovolemia. Myocardial contractility may also be depressed in septic shock. [PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Type > Distributive Shock; page 181]

41. Which assessment finding is most important in your determination of the severity of the patient's condition?
- A. Blood pressure
 - B. Heart rate
 - C. Oxygen saturation
 - D. Respiratory rate

The correct answer is A. Shock can range from mild to severe. Its manifestations are affected by the type of shock and the child's compensatory responses. Blood pressure is used to determine severity of shock; however, children with both compensated and hypotensive shock are at high risk for deterioration. The child with low cardiac output (ie, hypovolemic shock) but normal blood pressure due to vasoconstriction may have more end-organ compromise than the child with normal or increased cardiac output (ie, septic shock) and low systolic blood pressure has. [PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure); page 177]

42. Which normal saline fluid bolus is most appropriate for this patient?

- A. 10 mL/kg
- B. 15 mL/kg
- C. 20 mL/kg
- D. 30 mL/kg

The correct answer is C. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. If you suspect cardiogenic shock, use smaller fluid boluses of 5 to 10 mL/kg given over 10 to 20 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. Stop the infusion if such signs occur. Be prepared to support oxygenation and ventilation as necessary. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

43. In addition to oxygen administration and appropriate fluid resuscitation, which additional early intervention should you provide to this patient?

- A. Bronchodilator administration
- B. Antibiotic administration
- C. Corticosteroid administration
- D. Glucose administration

The correct answer is B. Identify the presence of fever, which may indicate infection and early need for antibiotics (eg, sepsis). [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Exposure; page 59]

44. A 3-year-old boy is brought to the emergency department by his mother. He is lethargic, with retractions and nasal flaring. He has a respiratory rate of 70/min, with warm extremities and brisk capillary refill. To which immediate life-threatening condition could this child's condition most likely progress if left untreated?

- A. Cardiogenic shock
- B. Hypovolemic shock
- C. Respiratory distress
- D. Respiratory failure

The correct answer is D. If left untreated, this child's condition can most likely progress to respiratory failure. Respiratory failure is a clinical state of inadequate oxygenation, ventilation, or both. Respiratory failure is recognized typically by abnormal appearance (particularly an altered level of consciousness, which may be characterized by agitation or a depressed level of consciousness), poor color, and reduced responsiveness. Although respiratory failure is often the result of progression of respiratory distress, it may occur with little or no respiratory effort. At times, recognition of respiratory failure requires laboratory data (eg, blood gas) to confirm the diagnosis. In other patients, the clinical examination is sufficient to identify respiratory failure. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Severity > Respiratory Failure; page 122]

45. A 6-year-old boy is being evaluated for difficulty breathing. Which finding would suggest this child has respiratory distress?

- A. Audible inspiratory stridor
- B. Decreased respiratory effort
- C. Oxygen saturation of 95%
- D. Respiratory rate of 8/min

The correct answer is A. Signs of mild respiratory distress include mild tachypnea, mild increase in respiratory effort (eg, nasal flaring, retractions), abnormal airway sounds (eg, stridor, wheezing, or grunting), and mottling. Signs of severe respiratory distress include marked tachypnea and apnea; significant or inadequate respiratory effort (eg, hypoventilation or bradypnea); abnormal airway sounds; low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; pale, cool skin; cyanosis; and decreased level of consciousness (eg, less responsive or unresponsive). [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Severity > Respiratory Distress; page 122]

46. An 8-year-old child is brought to the emergency department by his mother for difficulty breathing. He has a history of asthma and nut allergies. His mother tells you that he recently ate a cookie at a family picnic. Which condition is most likely to be present in this child?

- A. Disordered control of breathing
- B. Hypovolemic shock
- C. Lung tissue disease
- D. Upper airway obstruction

The correct answer is D. Common causes of upper airway obstruction are foreign-body aspiration (eg, food or a small object), infection, and swelling of the airway (eg, anaphylaxis, tonsillar hypertrophy, croup, or epiglottitis). [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Causes of Upper Airway Obstruction; page 124]

47. A 10-year-old child is brought to the emergency department for fever and cough. You obtain an oxygen saturation on the child. Which oxygen saturation would indicate that immediate intervention is needed?

- A. 88% on 4 L of nasal oxygen
- B. 95% on room air
- C. 96% on room air
- D. 97% on 50% oxygen

The correct answer is A. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

48. You are evaluating a 1-year-old child for respiratory distress. His heart rate is 168/min, and his respiratory rate has decreased from 65/min to 30/min. He now appears more lethargic and continues to have severe subcostal retractions. On the basis of your assessment, which is the most likely reason for this change in the child's condition?
- A. The child has a neurologic problem rather than a respiratory problem.
 - B. The child has signs of probable respiratory failure.**
 - C. The child likely has an arrhythmia rather than a respiratory problem.
 - D. The child's status is improving.

The correct answer is B. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

49. The parents of a 7-year-old child who is undergoing chemotherapy report that the child has been febrile and has not been feeling well, with recent onset of lethargy. Assessment reveals that the child is difficult to arouse and her skin color is pale. The child's heart rate is 160/min, respiratory rate is 38/min, blood pressure is 76/45 mm Hg, capillary refill time is 5 to 6 seconds, and temperature is 39.4°C (103°F). IV access has been established, and blood cultures have been obtained. Which action should you perform next?
- A. Administer 20 mL/kg of isotonic crystalloid over 5 to 10 minutes**
 - B. Administer 20 mL/kg of isotonic crystalloid over 30 minutes
 - C. Administer 10 mL/kg of packed red blood cells
 - D. Obtain a chest x-ray

The correct answer is A. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. If you suspect cardiogenic shock, use smaller fluid boluses of 5 to 10 mL/kg given over 10 to 20 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. Stop the infusion if such signs occur. Be prepared to support oxygenation and ventilation as necessary. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

50. A 7-year-old child in cardiac arrest is brought to the emergency department by ambulance. No palpable pulses are detected. The child's ECG is shown here.



How would you characterize this child's rhythm?

- A. Pulseless electrical activity
- B. Sinus bradycardia
- C. Ventricular escape rhythm
- D. Ventricular tachycardia

The correct answer is A. Pulseless electrical activity (PEA) is not a specific rhythm. It is a term describing any organized electrical activity (ie, not VF or asystole) on an ECG or cardiac monitor that is associated with no palpable pulses; pulsations may be detected by an arterial waveform or Doppler study, but pulses are not palpable. The rate of electrical activity may be slow (most common), normal, or fast. Very slow PEA may be referred to as agonal. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Recognition of Cardiac Arrest > Arrest Rhythms > Pulseless Electrical Activity; page 76]



American Heart Association

Pediatric Advanced Life Support Exam B

October 6, 2016

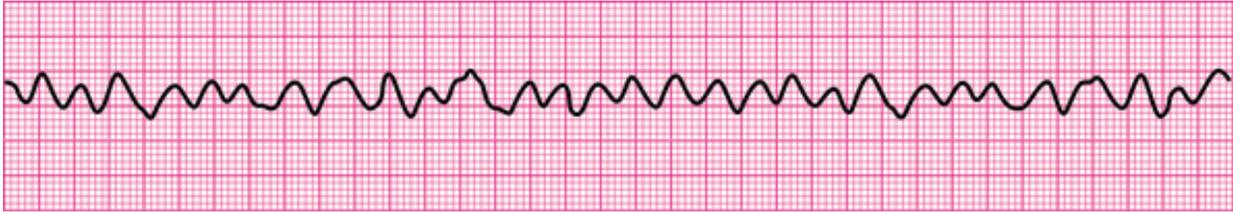
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Pediatric Advanced Life Support Exam B
(50 questions)

Please do not mark on this exam. Record the best answer on the separate answer sheet.

1. An 8-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. Which finding would suggest that immediate intervention is needed?
 - A. Warm, moist skin
 - B. Decreased level of consciousness
 - C. Systolic blood pressure of 106 mm Hg
 - D. Temperature of 38.1°C (100.5°F)
2. A 6-month-old infant is being evaluated for bradycardia. Which is the most likely cause of bradycardia?
 - A. Hyperglycemia
 - B. Hypovolemia
 - C. Hypoxia
 - D. Drug toxicity
3. You are performing the airway component of the primary assessment. Which finding would lead you to conclude that the child has an upper airway obstruction?
 - A. Dry, nonproductive cough
 - B. Subcostal retractions
 - C. Inspiratory stridor
 - D. Wheezing
4. A 3-year-old child is brought to the emergency department by his mother. Which is a normal finding for a 3-year-old child?
 - A. Respiratory rate of 24/min
 - B. Blood pressure of 55/30 mm Hg
 - C. Heart rate of 220/min
 - D. Oxygen saturation of 90%

5. A 3-year-old child is in cardiac arrest, and high-quality CPR is in progress. You are the team leader. The first rhythm check reveals the rhythm shown here.

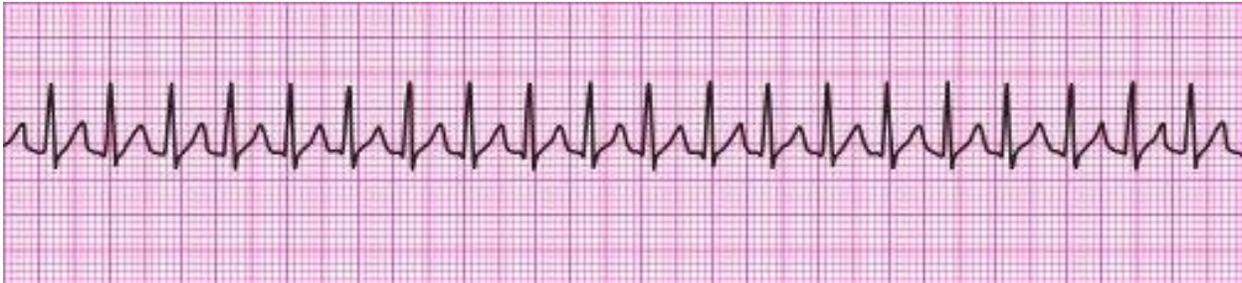


Defibrillation is attempted with a shock dose of 2 J/kg. After administration of the shock, what should you say to your team members?

- A. "Resume compressions."
- B. "Check for a pulse."
- C. "Give epinephrine 0.01 mg/kg."
- D. "Let's check the rhythm."

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy is pale and cool to the touch. His blood pressure is 70/45 mm Hg, heart rate is 190/min, and respiratory rate is 12/min. The SpO₂ is not detectable. Capillary refill time is 5 seconds. An IV is in place. The cardiac monitor displays the rhythm shown here.



6. Which rhythm is seen on the patient's cardiac monitor?
- A. Ventricular tachycardia
 - B. Normal sinus rhythm
 - C. Sinus tachycardia
 - D. Supraventricular tachycardia
7. If initial treatment is unavailable or delayed, which intervention is indicated?
- A. Synchronized cardioversion
 - B. Defibrillation
 - C. 20 mL/kg bolus isotonic crystalloid
 - D. High-quality CPR

8. A team member is unable to perform an assigned task because it is beyond the team member's scope of practice. Which action should the team member take?
- A. Refuse to perform the task
 - B. Ask for a new task or role
 - C. Do it anyway
 - D. Seek expert consultation
9. What ratio for compressions to breaths should be used for 1-rescuer infant CPR?
- A. Give 15 compressions to 2 breaths
 - B. Give 5 compressions to 1 breath
 - C. Give 20 compressions to 2 breaths
 - D. Give 30 compressions to 2 breaths
10. In postresuscitation management after cardiac arrest, extra care should be taken to avoid reperfusion injury. What should the ideal oxygen saturation range most likely be?
- A. 90% to 98%
 - B. 94% to 99%
 - C. 94% to 100%
 - D. 98% to 100%

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy was given a dose of rectal valium by his caretaker for a prolonged seizure. His blood pressure is 80/40 mm Hg, heart rate is 45/min, respiratory rate is 6/min, and SpO₂ is 60% on room air. He is unresponsive and cyanotic. The cardiac monitor displays the rhythm shown here.



11. Which rhythm is most consistent with this patient's presentation and ECG findings?
- A. Normal sinus rhythm
 - B. Second-degree heart block (Mobitz type II)
 - C. Pulseless electrical activity
 - D. Sinus bradycardia
12. Which action do you take next?
- A. Administer epinephrine IV
 - B. Provide bag-mask ventilation with 100% oxygen
 - C. Perform transcutaneous pacing
 - D. Perform endotracheal intubation

13. You are evaluating a 1-year-old child for respiratory distress. His heart rate is 168/min, and his respiratory rate has decreased from 65/min to 30/min. He now appears more lethargic and continues to have severe subcostal retractions. On the basis of your assessment, which is the most likely reason for this change in the child's condition?
- A. The child has a neurologic problem rather than a respiratory problem.
 - B. The child likely has an arrhythmia rather than a respiratory problem.
 - C. The child has signs of probable respiratory failure.
 - D. The child's status is improving.

Use this scenario to answer the next 2 questions:

A 4-year-old child in cardiac arrest is brought to the emergency department by ambulance. High-quality CPR is being performed. The cardiac monitor displays the rhythm strip shown here. The estimated weight of the child is 20 kg.



14. Which dosage range should you use for initial defibrillation?
- A. 0.5 to 2 J/kg
 - B. 2 to 4 J/kg
 - C. 4 to 6 J/kg
 - D. 6 to 8 J/kg
15. As the team leader, how many joules do you tell your team member to use to perform initial defibrillation?
- A. 100 J
 - B. 140 J
 - C. 10 J
 - D. 40 J
16. A 2-week-old infant is being evaluated for irritability and poor feeding. His blood pressure is 55/40 mm Hg, and capillary refill time is 5 seconds. Which statement best describes your assessment of this infant's blood pressure?
- A. It is normal.
 - B. It represents compensated shock.
 - C. It is hypertensive.
 - D. It is hypotensive.

17. A 3-year-old boy is brought to the emergency department by his mother. He is lethargic, with retractions and nasal flaring. He has a respiratory rate of 70/min, with warm extremities and brisk capillary refill. To which immediate life-threatening condition could this child's condition most likely progress if left untreated?
- A. Respiratory distress
 - B. Respiratory failure
 - C. Cardiogenic shock
 - D. Hypovolemic shock

Use this scenario to answer the next 2 questions:

You are caring for a 9-month-old girl who has increased work of breathing, a fever, and a cough. On assessment, you find an alert infant with stridor and retractions. The infant's SpO₂ is 94%. On auscultation, the lungs are clear bilaterally.

18. Which is the most likely cause of this infant's respiratory distress?
- A. Upper airway obstruction
 - B. Disordered control of breathing
 - C. Lower airway obstruction
 - D. Parenchymal lung disease
19. Which medication should you administer first?
- A. Dexamethasone, PO/IM
 - B. Epinephrine, nebulized
 - C. Albuterol, nebulized
 - D. Ceftriaxone, IV

Use this scenario to answer the next 2 questions:

After rectal administration of diazepam, an 8-year-old boy with a history of seizures is now unresponsive to painful stimulation. His respirations are shallow, at a rate of 10/min. His oxygen saturation is 94% on 2 L of nasal cannula oxygen. On examination, the child is snoring with poor chest rise and poor air entry bilaterally.

20. Which action should you take next?
- A. Reposition the patient, and insert an oral airway
 - B. Administer naloxone
 - C. Perform endotracheal intubation
 - D. Apply hyponasal cannula
21. If the patient continues to deteriorate after your initial intervention, which next step is most appropriate?
- A. Apply nasal cannula
 - B. Administer nebulized epinephrine
 - C. Provide bag-mask ventilation
 - D. Perform nasal suctioning

22. A 6-year-old boy is being evaluated for difficulty breathing. Which finding would suggest this child has respiratory distress?
- A. Respiratory rate of 8/min
 - B. Decreased respiratory effort
 - C. Oxygen saturation of 95%
 - D. Audible inspiratory stridor
23. A 10-year-old child is being evaluated for a headache. Which is a normal finding for this 10-year-old child?
- A. Blood pressure of 60/50 mm Hg
 - B. Respiratory rate of 8/min
 - C. Heart rate of 88/min
 - D. Temperature of 39.6°C (103.2°F)
24. The parents of a 7-year-old child who is undergoing chemotherapy report that the child has been febrile and has not been feeling well, with recent onset of lethargy. Assessment reveals that the child is difficult to arouse and her skin color is pale. The child's heart rate is 160/min, respiratory rate is 38/min, blood pressure is 76/45 mm Hg, capillary refill time is 5 to 6 seconds, and temperature is 39.4°C (103°F). IV access has been established, and blood cultures have been obtained. Which action should you perform next?
- A. Obtain a chest x-ray
 - B. Administer 20 mL/kg of isotonic crystalloid over 30 minutes
 - C. Administer 10 mL/kg of packed red blood cells
 - D. Administer 20 mL/kg of isotonic crystalloid over 5 to 10 minutes
25. With which condition in a child should IO access most likely be attempted before vascular access?
- A. Cardiogenic shock due to poisoning
 - B. Nonhemorrhagic hypovolemic shock
 - C. Cardiac arrest
 - D. Obstructive shock due to tension pneumothorax
26. A 10-year-old child is brought to the emergency department for fever and cough. You obtain an oxygen saturation on the child. Which oxygen saturation would indicate that immediate intervention is needed?
- A. 96% on room air
 - B. 97% on 50% oxygen
 - C. 88% on 4 L of nasal oxygen
 - D. 95% on room air
27. A 3-year-old child is having difficulty breathing. Which finding would most likely lead you to suspect an upper airway obstruction in this child?
- A. Increased inspiratory effort with retractions
 - B. Normal inspiratory sounds
 - C. Expiratory breath sounds
 - D. Decreased expiratory effort

28. During a resuscitation attempt, the team leader asks you to administer an initial dose of epinephrine at 0.1 mg/kg to be given IO. How should you respond?
- A. "I can't administer the drug at the dose you ordered."
 - B. "OK, but I will administer epinephrine 0.01 mg/kg."
 - C. "I think the correct dose is 0.01 mg/kg. Should I give that dose instead?"
 - D. "OK. I will administer epinephrine 0.1 mg/kg."
29. Which abnormality helps identify children with acute respiratory distress caused by lung tissue disease?
- A. Wheezes
 - B. Crackles
 - C. Prolonged inspiratory time
 - D. Stridor
30. You respond to an infant who is unresponsive, is not breathing, and does not have a pulse. You shout for nearby help, but no one arrives. What action should you take next?
- A. Activate the emergency response system after giving CPR for 10 minutes
 - B. Activate the emergency response system after giving CPR for 5 minutes
 - C. Begin CPR for 2 minutes before leaving to activate the emergency response system
 - D. Begin CPR for 1 minute before leaving to activate the emergency response system
31. A 5-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. You are using the primary assessment to evaluate the child. When assessing the child's neurologic status, you note that he has spontaneous eye opening, is fully oriented, and is able to follow commands. How would you document this child's AVPU (Alert, Voice, Painful, Unresponsive) Pediatric Response Scale finding?
- A. Unresponsive
 - B. Voice
 - C. Painful
 - D. Alert
32. Which condition is characterized by a prolonged expiratory phase and wheezing?
- A. Lower airway obstruction
 - B. Upper airway obstruction
 - C. Disordered control of breathing
 - D. Hypovolemic shock

Use this scenario to answer the next 3 questions:

You are caring for a 3-month-old boy with a 2-day history of fever, vomiting, and diarrhea. His parents state that he has been sleeping much more. His heart rate is 190/min, temperature is 38.3°C (101°F), blood pressure is 59/29 mm Hg, respiratory rate is 70/min and shallow, and oxygen saturation is 94% on 100% oxygen. His capillary refill time is 4 to 5 seconds, and he has mottled, cool extremities. The infant weighs 6 kg.

33. Which assessment finding indicates that the infant has hypotensive shock?
- A. Capillary refill time
 - B. Blood pressure
 - C. Heart rate
 - D. Tachypnea
34. On the basis of this infant's presentation, which type of shock does this infant have?
- A. Obstructive
 - B. Cardiogenic
 - C. Distributive
 - D. Hypovolemic
35. You have decided that this infant needs fluid resuscitation. How much fluid should you administer?
- A. 20 mL/kg normal saline
 - B. 20 mL/kg 0.45% normal saline
 - C. 10 mL/kg lactated Ringer's
 - D. 15 mL/kg 5% dextrose in 0.45% normal saline
36. A 6-month-old infant is unresponsive. You begin checking for breathing at the same time you check for the infant's pulse. Which is the maximum time you should spend when trying to simultaneously check for breathing and palpate the infant's pulse before starting CPR?
- A. 30 seconds
 - B. 60 seconds
 - C. 10 seconds
 - D. 15 seconds

Use this scenario to answer the next 4 questions:

You are caring for a 12-year-old girl with acute lymphoblastic leukemia. She is responsive, but she does not feel well and appears to be flushed. Her temperature is 39°C (102.2°F), heart rate is 118/min, respiratory rate is 36/min, blood pressure is 100/40 mm Hg, and oxygen saturation is 96% on room air. Your assessment reveals mild increase in work of breathing and bounding pulses. The child is receiving 100% oxygen by nonrebreathing mask.

37. Laboratory studies document a lactic acidosis. On the basis of the patient's clinical assessment and history, which type of shock does this patient most likely have?
- A. Cardiogenic
 - B. Distributive, septic
 - C. Distributive, neurogenic
 - D. Obstructive
38. Which assessment finding is most important in your determination of the severity of the patient's condition?
- A. Respiratory rate
 - B. Heart rate
 - C. Oxygen saturation
 - D. Blood pressure
39. Which normal saline fluid bolus is most appropriate for this patient?
- A. 10 mL/kg
 - B. 15 mL/kg
 - C. 20 mL/kg
 - D. 30 mL/kg
40. In addition to oxygen administration and appropriate fluid resuscitation, which additional early intervention should you provide to this patient?
- A. Bronchodilator administration
 - B. Corticosteroid administration
 - C. Antibiotic administration
 - D. Glucose administration
41. An 8-year-old child is brought to the emergency department by his mother for difficulty breathing. He has a history of asthma and nut allergies. His mother tells you that he recently ate a cookie at a family picnic. Which condition is most likely to be present in this child?
- A. Disordered control of breathing
 - B. Hypovolemic shock
 - C. Upper airway obstruction
 - D. Lung tissue disease

42. A 7-year-old child in cardiac arrest is brought to the emergency department by ambulance. No palpable pulses are detected. The child's ECG is shown here.



How would you characterize this child's rhythm?

- A. Ventricular tachycardia
 - B. Pulseless electrical activity
 - C. Sinus bradycardia
 - D. Ventricular escape rhythm
43. You are caring for patients in the emergency department. Which 2-year-old child requires immediate intervention?
- A. A child with a temperature of 37.4°C (99.3°F)
 - B. A child who is grunting
 - C. A child with an SpO₂ of 95% on room air
 - D. A child with a systolic blood pressure of 92 mm Hg
44. A 4-year-old child is brought to the emergency department for seizures. The seizures stopped a few minutes ago, but the child continues to have slow and irregular respirations. Which condition is most consistent with your assessment?
- A. Lung tissue disease
 - B. Upper airway obstruction
 - C. Disordered control of breathing
 - D. Lower airway obstruction

Use this scenario to answer the next 2 questions:

You are caring for a 5-year-old boy with a 4-day history of high fever and cough. He is having increasing lethargy, grunting, and sleepiness. Now he is difficult to arouse and is unresponsive to voice commands. His oxygen saturation is 72% on room air and 89% when on a nonrebreathing oxygen mask. He has shallow respirations, with a respiratory rate of 38/min. Auscultation of the lungs reveals bilateral crackles.

45. Which assessment finding is consistent with respiratory failure in this child?

- A. Respiratory rate
- B. Cough
- C. Fever
- D. Oxygen saturation

46. Which medication would be most appropriate?

- A. An antibiotic
- B. A bronchodilator
- C. A corticosteroid
- D. A vasopressor

47. An 8-year-old child is brought to the emergency department with a 2-day history of lethargy and polyuria. The child has new-onset rapid, deep, and labored breathing. Which diagnostic test should you order first?

- A. 12-lead ECG
- B. Arterial blood gases
- C. Serum potassium
- D. Blood glucose

48. You are the team leader during a pediatric resuscitation attempt. Which action is an element of high-quality CPR?

- A. Providing a compression depth of one fourth the depth of the chest
- B. Allowing complete chest wall recoil after each compression
- C. Providing a compression rate of 80 to 100/min
- D. Performing pulse checks every minute

49. You are evaluating a 10-year-old child who is febrile and tachycardic. The child's capillary refill time is 5 seconds. Which parameter will determine if the child is in compensated shock?

- A. Chest movement
- B. Blood pressure
- C. Respiratory effort
- D. Respiratory rate

50. A 6-year-old child is found unresponsive, not breathing, and without a pulse. One healthcare worker leaves to activate the emergency response system and get the resuscitation equipment. You and another healthcare provider immediately begin performing CPR. Which compression-to-ventilation ratio do you use?
- A. 15:1
 - B. 15:2
 - C. 30:1
 - D. 30:2

**Answer Key
Pediatric Advanced Life Support Exam B**

| Question | Answer | | | |
|----------|--------|---|---|---|
| 1. | A | • | C | D |
| 2. | A | B | • | D |
| 3. | A | B | • | D |
| 4. | • | B | C | D |
| 5. | • | B | C | D |
| 6. | A | B | C | • |
| 7. | • | B | C | D |
| 8. | A | • | C | D |
| 9. | A | B | C | • |
| 10. | A | • | C | D |
| 11. | A | B | C | • |
| 12. | A | • | C | D |
| 13. | A | B | • | D |
| 14. | A | • | C | D |
| 15. | A | B | C | • |
| 16. | A | B | C | • |
| 17. | A | • | C | D |
| 18. | • | B | C | D |
| 19. | A | • | C | D |
| 20. | • | B | C | D |
| 21. | A | B | • | D |
| 22. | A | B | C | • |
| 23. | A | B | • | D |
| 24. | A | B | C | • |
| 25. | A | B | • | D |

| | | | | |
|-----|---|---|---|---|
| 26. | A | B | • | D |
| 27. | • | B | C | D |
| 28. | A | B | • | D |
| 29. | A | • | C | D |
| 30. | A | B | • | D |
| 31. | A | B | C | • |
| 32. | • | B | C | D |
| 33. | A | • | C | D |
| 34. | A | B | C | • |
| 35. | • | B | C | D |
| 36. | A | B | • | D |
| 37. | A | • | C | D |
| 38. | A | B | C | • |
| 39. | A | B | • | D |
| 40. | A | B | • | D |
| 41. | A | B | • | D |
| 42. | A | • | C | D |
| 43. | A | • | C | D |
| 44. | A | B | • | D |
| 45. | A | B | C | • |
| 46. | • | B | C | D |
| 47. | A | B | C | • |
| 48. | A | • | C | D |
| 49. | A | • | C | D |
| 50. | A | • | C | D |

Annotated Answer Key Pediatric Advanced Life Support Exam B

Provider Manual page numbers below refer to the printed book and the eBook as viewed through the offline desktop/laptop reader, not the eBook as viewed through the mobile apps or ebooks.heart.org.

1. An 8-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. Which finding would suggest that immediate intervention is needed?
 - A. Warm, moist skin
 - B. Decreased level of consciousness**
 - C. Systolic blood pressure of 106 mm Hg
 - D. Temperature of 38.1°C (100.5°F)

The correct answer is B. Signs of a life-threatening condition that would require immediate intervention include complete or severe airway obstruction (Airway); apnea, significant increased work of breathing, or bradypnea (Breathing); weak or absent pulses, poor perfusion, hypotension, or bradycardia (Circulation); unresponsiveness or decreased level of consciousness (Disability); and significant hypothermia, significant bleeding, petechiae, or purpura consistent with septic shock or coagulation problem (Exposure). [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Life-Threatening Problems; page 71]

2. A 6-month-old infant is being evaluated for bradycardia. Which is the most likely cause of bradycardia?
 - A. Hyperglycemia
 - B. Hypovolemia
 - C. Hypoxia**
 - D. Drug toxicity

The correct answer is C. Bradycardia is a heart rate slower than normal for a child's age and clinical condition. Slight bradycardia may be normal in athletic children, but a very slow rate in a child with other symptoms is a worrisome sign and may indicate that cardiac arrest is imminent. Hypoxia is the most common cause of bradycardia in children. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Heart Rate and Rhythm; page 48]

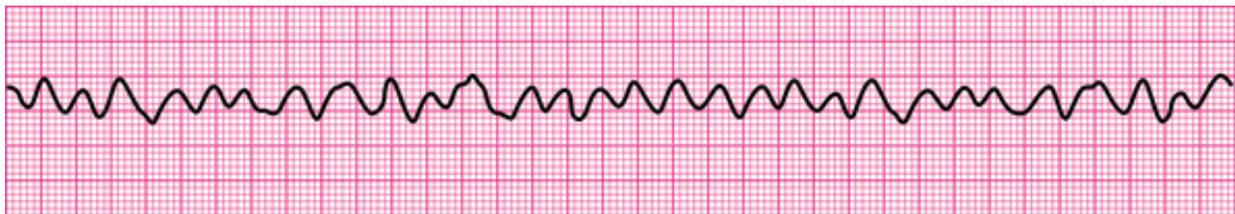
3. You are performing the airway component of the primary assessment. Which finding would lead you to conclude that the child has an upper airway obstruction?
 - A. Dry, nonproductive cough
 - B. Subcostal retractions
 - C. Inspiratory stridor**
 - D. Wheezing

The correct answer is C. Stridor is a coarse, usually higher-pitched breathing sound typically heard on inspiration. It also may be heard during both inspiration and expiration. Stridor is a sign of upper airway (extrathoracic) obstruction and may indicate that the obstruction is critical and requires immediate intervention. There are many causes of stridor, such as a foreign body in the airway and infection (eg, croup). [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Lung and Airway Sounds; page 44]

4. A 3-year-old child is brought to the emergency department by his mother. Which is a normal finding for a 3-year-old child?
- A. Respiratory rate of 24/min
 - B. Blood pressure of 55/30 mm Hg
 - C. Heart rate of 220/min
 - D. Oxygen saturation of 90%

The correct answer is A. The normal respiratory rate for a 3-year-old child is between 22 and 37 breaths per minute. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Normal Respiratory Rate; page 39]

5. A 3-year-old child is in cardiac arrest, and high-quality CPR is in progress. You are the team leader. The first rhythm check reveals the rhythm shown here.



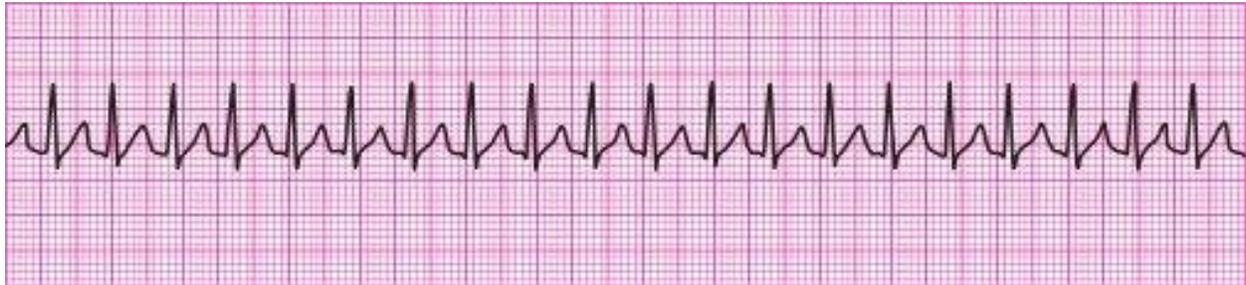
Defibrillation is attempted with a shock dose of 2 J/kg. After administration of the shock, what should you say to your team members?

- A. "Resume compressions."
- B. "Check for a pulse."
- C. "Give epinephrine 0.01 mg/kg."
- D. "Let's check the rhythm."

The correct answer is A. When attempting defibrillation, provide compressions until the defibrillator is charged, deliver 1 shock, and immediately resume CPR, starting with chest compressions. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > PALS in Cardiac Arrest > Defibrillation; page 85]

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy is pale and cool to the touch. His blood pressure is 70/45 mm Hg, heart rate is 190/min, and respiratory rate is 12/min. The SpO₂ is not detectable. Capillary refill time is 5 seconds. An IV is in place. The cardiac monitor displays the rhythm shown here.



6. Which rhythm is seen on the patient's cardiac monitor?

- A. Ventricular tachycardia
- B. Normal sinus rhythm
- C. Sinus tachycardia
- D. Supraventricular tachycardia

The correct answer is D. This ECG rhythm strip shows supraventricular tachycardia. Note that the QRS complexes are narrow and regular, the rate is very fast (ie, greater than 200/min), and P waves are not obvious. [*PALS Provider Manual*, Appendix > Rhythm Recognition Review > Rhythm Strip 8; page 313]

7. If initial treatment is unavailable or delayed, which intervention is indicated?

- A. Synchronized cardioversion
- B. Defibrillation
- C. 20 mL/kg bolus isotonic crystalloid
- D. High-quality CPR

The correct answer is A. If initial treatment with adenosine is unavailable (or delayed), synchronized cardioversion (with an initial dose of 0.5 to 1 J/kg) is indicated. [*PALS Provider Manual*, Part 11: Management of Arrhythmias; Pediatric Tachycardia With a Pulse and Poor Perfusion Algorithm; page 272]

8. A team member is unable to perform an assigned task because it is beyond the team member's scope of practice. Which action should the team member take?
- A. Refuse to perform the task
 - B. Ask for a new task or role**
 - C. Do it anyway
 - D. Seek expert consultation

The correct answer is B. Not only should everyone on the team know his or her own limitations and capabilities, but the team leader should also be aware of them. This allows the team leader to evaluate team resources and call for backup of team members when assistance is needed. High-performance team members should anticipate situations in which they might require assistance and inform the team leader. [*PALS Provider Manual*, Part 5: Effective Resuscitation Team Dynamics > Roles of the Team Leader and Team Members > Roles > Knowing Your Limitations; page 107]

9. What ratio for compressions to breaths should be used for 1-rescuer infant CPR?
- A. Give 15 compressions to 2 breaths
 - B. Give 5 compressions to 1 breath
 - C. Give 20 compressions to 2 breaths
 - D. Give 30 compressions to 2 breaths**

The correct answer is D. The universal rate for compressions in all cardiac arrest victims is 100 to 120/min. The compression-to-ventilation ratio for single rescuers is the same (30:2) in adults, children, and infants. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > BLS for Infants and Children > Infant/Child Chest Compressions > Compression Rate and Compression-to-Ventilation Ratio; page 20]

10. In postresuscitation management after cardiac arrest, extra care should be taken to avoid reperfusion injury. What should the ideal oxygen saturation range most likely be?
- A. 90% to 98%
 - B. 94% to 99%**
 - C. 94% to 100%
 - D. 98% to 100%

The correct answer is B. After return of spontaneous circulation (ROSC), it may be reasonable for rescuers to titrate oxygen administration to achieve normoxemia, which is an oxygen saturation of 94% or above. When possible, oxygen should be weaned to target an oxyhemoglobin saturation within the range of 94% to 99%. The goal should be to strictly avoid hypoxemia. [*PALS Provider Manual*, Part 1: Course Overview > Science Update > Post-Cardiac Arrest PaO₂ and PaCO₂; page 14]

Use this scenario to answer the next 2 questions:

An unresponsive 9-year-old boy was given a dose of rectal valium by his caretaker for a prolonged seizure. His blood pressure is 80/40 mm Hg, heart rate is 45/min, respiratory rate is 6/min, and SpO₂ is 60% on room air. He is unresponsive and cyanotic. The cardiac monitor displays the rhythm shown here.



11. Which rhythm is most consistent with this patient's presentation and ECG findings?

- A. Normal sinus rhythm
- B. Second-degree heart block (Mobitz type II)
- C. Pulseless electrical activity
- D. Sinus bradycardia**

The correct answer is D. Sinus bradycardia is a sinus node depolarization rate that is slower than normal for the child's age. Sinus bradycardia is not necessarily problematic. It is often present in healthy children at rest when metabolic demands of the body are relatively low (eg, during sleep). Well-conditioned athletes often have sinus bradycardia because they have high stroke volume and increased vagal tone. However, sinus bradycardia can also develop in response to hypoxia, hypotension, and acidosis. Sinus bradycardia also may result from drug effects. Therefore, evaluation of sinus bradycardia always must involve assessment of the clinical status of the child. Note the slow heart rate (45/min) compared with the normal heart rate for age and narrow QRS complex. [*PALS Provider Manual*, Part 10: Recognition of Arrhythmias > Recognition of Bradycardia > Types of Bradyarrhythmias > Sinus Bradycardia; page 241]

12. Which action do you take next?

- A. Administer epinephrine IV
- B. Provide bag-mask ventilation with 100% oxygen**
- C. Perform transcutaneous pacing
- D. Perform endotracheal intubation

The correct answer is B. The next action that should be taken is to immediately provide bag-mask ventilation with 100% oxygen. [*PALS Provider Manual*, Part 11: Management of Arrhythmias > Pediatric Bradycardia With a Pulse and Poor Perfusion Algorithm; page 254]

13. You are evaluating a 1-year-old child for respiratory distress. His heart rate is 168/min, and his respiratory rate has decreased from 65/min to 30/min. He now appears more lethargic and continues to have severe subcostal retractions. On the basis of your assessment, which is the most likely reason for this change in the child's condition?
- A. The child has a neurologic problem rather than a respiratory problem.
 - B. The child likely has an arrhythmia rather than a respiratory problem.
 - C. The child has signs of probable respiratory failure.
 - D. The child's status is improving.

The correct answer is C. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

Use this scenario to answer the next 2 questions:

A 4-year-old child in cardiac arrest is brought to the emergency department by ambulance. High-quality CPR is being performed. The cardiac monitor displays the rhythm strip shown here. The estimated weight of the child is 20 kg.



14. Which dosage range should you use for initial defibrillation?
- A. 0.5 to 2 J/kg
 - B. 2 to 4 J/kg
 - C. 4 to 6 J/kg
 - D. 6 to 8 J/kg

The correct answer is B. For manual defibrillation, an initial dose of 2 to 4 J/kg is acceptable, and for ease of teaching, a 2 J/kg (biphasic or monophasic waveform) may be considered. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > Pediatric Cardiac Arrest Algorithm > Shockable Rhythm: VF/pVT (Step 2); page 90]

15. As the team leader, how many joules do you tell your team member to use to perform initial defibrillation?

- A. 100 J
- B. 140 J
- C. 10 J
- D. 40 J**

The correct answer is D. For manual defibrillation, an initial dose of 2 to 4 J/kg is acceptable. Because the estimated weight of the child is 20 kg (2 J × 20 kg), 40 J should be used. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Management of Cardiac Arrest > Pediatric Cardiac Arrest Algorithm > Shockable Rhythm: VF/pVT (Step 2); page 90]

16. A 2-week-old infant is being evaluated for irritability and poor feeding. His blood pressure is 55/40 mm Hg, and capillary refill time is 5 seconds. Which statement best describes your assessment of this infant's blood pressure?

- A. It is normal.
- B. It represents compensated shock.
- C. It is hypertensive.
- D. It is hypotensive.**

The correct answer is D. The normal blood pressure for a 2-week-old infant should be within the systolic range of 67-84 mm Hg and a diastolic range of 35-53 mm Hg. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Blood Pressure; page 53]

17. A 3-year-old boy is brought to the emergency department by his mother. He is lethargic, with retractions and nasal flaring. He has a respiratory rate of 70/min, with warm extremities and brisk capillary refill. To which immediate life-threatening condition could this child's condition most likely progress if left untreated?

- A. Respiratory distress
- B. Respiratory failure**
- C. Cardiogenic shock
- D. Hypovolemic shock

The correct answer is B. If left untreated, this child's condition can most likely progress to respiratory failure. Respiratory failure is a clinical state of inadequate oxygenation, ventilation, or both. Respiratory failure is recognized typically by abnormal appearance (particularly an altered level of consciousness, which may be characterized by agitation or a depressed level of consciousness), poor color, and reduced responsiveness. Although respiratory failure is often the result of progression of respiratory distress, it may occur with little or no respiratory effort. At times, recognition of respiratory failure requires laboratory data (eg, blood gas) to confirm the diagnosis. In other patients, the clinical examination is sufficient to identify respiratory failure. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Severity > Respiratory Failure; page 122]

Use this scenario to answer the next 2 questions:

You are caring for a 9-month-old girl who has increased work of breathing, a fever, and a cough. On assessment, you find an alert infant with stridor and retractions. The infant's SpO₂ is 94%. On auscultation, the lungs are clear bilaterally.

18. Which is the most likely cause of this infant's respiratory distress?

- A. Upper airway obstruction
- B. Disordered control of breathing
- C. Lower airway obstruction
- D. Parenchymal lung disease

The correct answer is A. The major clinical signs typically occur during the inspiratory phase of the respiratory cycle, such as stridor, hoarseness, or a change in voice or cry. Inspiratory retractions, use of accessory muscles, and nasal flaring are often present. The respiratory rate is often only mildly elevated, as upper airway obstruction is worse with faster breathing. Examples include foreign body obstruction, croup, and epiglottitis. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Signs of Upper Airway Obstruction; page 124]

19. Which medication should you administer first?

- A. Dexamethasone, PO/IM
- B. Epinephrine, nebulized
- C. Albuterol, nebulized
- D. Ceftriaxone, IV

The correct answer is B. Suctioning is helpful in removing secretions, blood, or debris; however, if the upper airway obstruction is caused by edema from infection (eg, croup) or allergic reaction, carefully weigh potential benefits vs risks of suctioning. Suctioning may increase the child's agitation and may increase respiratory distress. Instead, consider allowing the child to assume a position of comfort. Give nebulized epinephrine, particularly if the swelling is beyond the tongue. [*PALS Provider Manual*, Part 7: Management of Respiratory Distress and Failure > Management of Upper Airway Obstruction > General Management of Upper Airway Obstruction; page 132]

Use this scenario to answer the next 2 questions:

After rectal administration of diazepam, an 8-year-old boy with a history of seizures is now unresponsive to painful stimulation. His respirations are shallow, at a rate of 10/min. His oxygen saturation is 94% on 2 L of nasal cannula oxygen. On examination, the child is snoring with poor chest rise and poor air entry bilaterally.

20. Which action should you take next?

- A. Reposition the patient, and insert an oral airway
- B. Administer naloxone
- C. Perform endotracheal intubation
- D. Apply hyponasal cannula

The correct answer is A. Support of airway and ventilation is the main therapeutic intervention for management of respiratory distress or failure caused by poisoning or drug overdose. [*PALS Provider Manual*, Part 7: Management of Respiratory Distress and Failure > Management of Disordered Control of Breathing > Specific Management of Disordered Control of Breathing by Etiology > Management of Respiratory Distress/Failure in Poisoning or Drug Overdose; page 144]

21. If the patient continues to deteriorate after your initial intervention, which next step is most appropriate?

- A. Apply nasal cannula
- B. Administer nebulized epinephrine
- C. Provide bag-mask ventilation
- D. Perform nasal suctioning

The correct answer is C. Bag-mask ventilation can provide adequate oxygenation and ventilation for a child with no breathing or inadequate breathing despite an open/patent airway. Signs of inadequate breathing are apnea, abnormal respiratory rate, inadequate breath sounds, and hypoxemia despite supplementary oxygen. [*PALS Provider Manual*, Resources for Management of Respiratory Emergencies > Bag-Mask Ventilation > Overview; page 147]

22. A 6-year-old boy is being evaluated for difficulty breathing. Which finding would suggest this child has respiratory distress?

- A. Respiratory rate of 8/min
- B. Decreased respiratory effort
- C. Oxygen saturation of 95%
- D. Audible inspiratory stridor

The correct answer is D. Signs of mild respiratory distress include mild tachypnea, mild increase in respiratory effort (eg, nasal flaring, retractions), abnormal airway sounds (eg, stridor, wheezing, or grunting), and mottling. Signs of severe respiratory distress include marked tachypnea and apnea; significant or inadequate respiratory effort (eg, hypoventilation or bradypnea); abnormal airway sounds; low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; pale, cool skin; cyanosis; and decreased level of consciousness (eg, less responsive or unresponsive). [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Severity > Respiratory Distress; page 122]

23. A 10-year-old child is being evaluated for a headache. Which is a normal finding for this 10-year-old child?
- A. Blood pressure of 60/50 mm Hg
 - B. Respiratory rate of 8/min
 - C. Heart rate of 88/min**
 - D. Temperature of 39.6°C (103.2°F)

The correct answer is C. The normal heart rate for a school-age child is between 75 and 118/min. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Circulation > Heart Rate and Rhythm; page 48]

24. The parents of a 7-year-old child who is undergoing chemotherapy report that the child has been febrile and has not been feeling well, with recent onset of lethargy. Assessment reveals that the child is difficult to arouse and her skin color is pale. The child's heart rate is 160/min, respiratory rate is 38/min, blood pressure is 76/45 mm Hg, capillary refill time is 5 to 6 seconds, and temperature is 39.4°C (103°F). IV access has been established, and blood cultures have been obtained. Which action should you perform next?
- A. Obtain a chest x-ray
 - B. Administer 20 mL/kg of isotonic crystalloid over 30 minutes
 - C. Administer 10 mL/kg of packed red blood cells
 - D. Administer 20 mL/kg of isotonic crystalloid over 5 to 10 minutes**

The correct answer is D. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. If you suspect cardiogenic shock, use smaller fluid boluses of 5 to 10 mL/kg given over 10 to 20 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. Stop the infusion if such signs occur. Be prepared to support oxygenation and ventilation as necessary. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

25. With which condition in a child should IO access most likely be attempted before vascular access?
- A. Cardiogenic shock due to poisoning
 - B. Nonhemorrhagic hypovolemic shock
 - C. Cardiac arrest**
 - D. Obstructive shock due to tension pneumothorax

The correct answer is C. Intraosseous (IO) cannulation is a relatively simple and effective method of rapidly establishing vascular access for emergency fluids or medications. It provides access to a noncollapsible marrow venous plexus, which serves as a rapid, safe, and reliable route for administration of drugs, crystalloids, colloids, and blood during resuscitation. IO access can be achieved in children of all ages, often in about 30 to 60 seconds. In certain circumstances (eg, cardiac arrest or severe shock with severe vasoconstriction), it may be the initial vascular access attempted. [*PALS Provider Manual*, Resources for Management of Circulatory Emergencies > Intraosseous Access; page 235]

26. A 10-year-old child is brought to the emergency department for fever and cough. You obtain an oxygen saturation on the child. Which oxygen saturation would indicate that immediate intervention is needed?
- A. 96% on room air
 - B. 97% on 50% oxygen
 - C. 88% on 4 L of nasal oxygen**
 - D. 95% on room air

The correct answer is C. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

27. A 3-year-old child is having difficulty breathing. Which finding would most likely lead you to suspect an upper airway obstruction in this child?
- A. Increased inspiratory effort with retractions**
 - B. Normal inspiratory sounds
 - C. Expiratory breath sounds
 - D. Decreased expiratory effort

The correct answer is A. The major clinical signs typically occur during the inspiratory phase of the respiratory cycle, such as stridor, hoarseness, or a change in voice or cry. Inspiratory retractions, use of accessory muscles, and nasal flaring are often present. The respiratory rate is often only mildly elevated, as upper airway obstruction is worse with faster breathing. Examples include foreign body obstruction, croup, and epiglottitis. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Signs of Upper Airway Obstruction; page 124]

28. During a resuscitation attempt, the team leader asks you to administer an initial dose of epinephrine at 0.1 mg/kg to be given IO. How should you respond?
- A. "I can't administer the drug at the dose you ordered."
 - B. "OK, but I will administer epinephrine 0.01 mg/kg."
 - C. "I think the correct dose is 0.01 mg/kg. Should I give that dose instead?"**
 - D. "OK. I will administer epinephrine 0.1 mg/kg."

The correct answer is C. During a resuscitation attempt, the leader or a member of a high-performance team may need to intervene if an action that is about to occur may be inappropriate at the time. Although constructive intervention is necessary, it should be tactful. Team leaders should avoid confrontation with team members. Instead, conduct a debriefing afterward if constructive criticism is needed. [*PALS Provider Manual*, Part 5: Effective Resuscitation Team Dynamics > Roles of the Team Leader and Team Members > Roles > Constructive Interventions; page 108]

29. Which abnormality helps identify children with acute respiratory distress caused by lung tissue disease?

- A. Wheezes
- B. Crackles
- C. Prolonged inspiratory time
- D. Stridor

The correct answer is B. Signs of lung tissue disease include tachypnea, increased respiratory effort, grunting, crackles, diminished breath sounds, tachycardia, and hypoxemia. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Lung Tissue Disease > Signs of Lung Tissue Disease; page 126]

30. You respond to an infant who is unresponsive, is not breathing, and does not have a pulse. You shout for nearby help, but no one arrives. What action should you take next?

- A. Activate the emergency response system after giving CPR for 10 minutes
- B. Activate the emergency response system after giving CPR for 5 minutes
- C. Begin CPR for 2 minutes before leaving to activate the emergency response system
- D. Begin CPR for 1 minute before leaving to activate the emergency response system

The correct answer is C. If the victim is not breathing normally or is only gasping and has no pulse, begin high-quality CPR for 2 minutes before activating the emergency response system. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > Infant and Child 1-Rescuer BLS Sequence > Determine Next Actions; page 19]

31. A 5-year-old child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. You are using the primary assessment to evaluate the child. When assessing the child's neurologic status, you note that he has spontaneous eye opening, is fully oriented, and is able to follow commands. How would you document this child's AVPU (Alert, Voice, Painful, Unresponsive) Pediatric Response Scale finding?

- A. Unresponsive
- B. Voice
- C. Painful
- D. Alert

The correct answer is D. To rapidly evaluate cerebral cortex function, use the AVPU Pediatric Response Scale. This scale is a system for rating a child's level of consciousness, an indicator of cerebral cortex function and consists of 4 ratings: Alert, Voice, Painful, and Unresponsive. Alert indicates the child is awake, active, and appropriately responsive to caregivers and external stimuli. "Appropriate response" is assessed in terms of the anticipated response based on the child's age and/or developmental level and the setting or situation. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Disability > AVPU Pediatric Response Scale; page 55]

32. Which condition is characterized by a prolonged expiratory phase and wheezing?

- A. Lower airway obstruction
- B. Upper airway obstruction
- C. Disordered control of breathing
- D. Hypovolemic shock

The correct answer is A. Obstruction of the lower airways (ie, the airways within the thorax) can occur in the lower trachea, the bronchi, or the bronchioles. The major clinical signs typically occur during the expiratory phase of the respiratory cycle. The child often has wheezing and a prolonged expiratory phase requiring increased expiratory effort. The respiratory rate is usually elevated, particularly in infants. Inspiratory retractions become prominent when the lower airway obstruction impairs inspiration and exhalation, requiring increased respiratory effort. Examples include asthma and bronchiolitis. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Lower Airway Obstruction; page 124, and Signs of Lower Airway Obstruction; page 125]

Use this scenario to answer the next 3 questions:

You are caring for a 3-month-old boy with a 2-day history of fever, vomiting, and diarrhea. His parents state that he has been sleeping much more. His heart rate is 190/min, temperature is 38.3°C (101°F), blood pressure is 59/29 mm Hg, respiratory rate is 70/min and shallow, and oxygen saturation is 94% on 100% oxygen. His capillary refill time is 4 to 5 seconds, and he has mottled, cool extremities. The infant weighs 6 kg.

33. Which assessment finding indicates that the infant has hypotensive shock?

- A. Capillary refill time
- B. Blood pressure
- C. Heart rate
- D. Tachypnea

The correct answer is B. Hypotensive (decompensated) shock can result from many causes and is characterized by evidence of impaired perfusion that will rapidly progress to cardiac arrest if not corrected. Signs include abnormal clinical appearance and evidence of severely impaired perfusion (ie, absent distal pulses and weak central pulses, cool extremities, mottled skin, or altered level of consciousness). Hypotension is a late finding in most types of shock and may signal impending cardiac arrest. Hypotension can occur early in septic shock because mediators of sepsis produce vasodilation and reduce systemic vascular resistance. In this setting, the child may initially appear to have warm extremities, brisk capillary refill, and full peripheral pulses despite hypotension. [*PALS Provider Manual*, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure) > Hypotensive Shock; page 178]

34. On the basis of this infant's presentation, which type of shock does this infant have?

- A. Obstructive
- B. Cardiogenic
- C. Distributive
- D. Hypovolemic

The correct answer is D. Hypovolemic shock refers to a clinical state of reduced intravascular volume. It is the most common type of shock in pediatric patients. It can be caused by extravascular fluid loss (eg, diarrhea, dehydration) or intravascular volume loss (eg, hemorrhage) and results in decreased preload and cardiac output. Hypovolemic shock is the result of an absolute deficiency of intravascular blood volume, but, in fact, it typically represents depletion of both intravascular and extravascular fluid volume. As a result, adequate fluid resuscitation often requires administration of fluid boluses that exceed the volume of the estimated intravascular deficit. [*PALS Provider Manual*, Part 8: Recognition of Shock > Identification of Shock by Type > Hypovolemic Shock; page 180]

35. You have decided that this infant needs fluid resuscitation. How much fluid should you administer?

- A. 20 mL/kg normal saline
- B. 20 mL/kg 0.45% normal saline
- C. 10 mL/kg lactated Ringer's
- D. 15 mL/kg 5% dextrose in 0.45% normal saline

The correct answer is A. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

36. A 6-month-old infant is unresponsive. You begin checking for breathing at the same time you check for the infant's pulse. Which is the maximum time you should spend when trying to simultaneously check for breathing and palpate the infant's pulse before starting CPR?

- A. 30 seconds
- B. 60 seconds
- C. 10 seconds
- D. 15 seconds

The correct answer is C. To minimize delay in starting CPR, you may assess breathing at the same time as you check the pulse. This should take no more than 10 seconds. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > Infant and Child 1-Rescuer BLS Sequence > Assess for Breathing and Pulse (Box 3); page 17]

Use this scenario to answer the next 4 questions:

You are caring for a 12-year-old girl with acute lymphoblastic leukemia. She is responsive, but she does not feel well and appears to be flushed. Her temperature is 39°C (102.2°F), heart rate is 118/min, respiratory rate is 36/min, blood pressure is 100/40 mm Hg, and oxygen saturation is 96% on room air. Your assessment reveals mild increase in work of breathing and bounding pulses. The child is receiving 100% oxygen by nonrebreathing mask.

37. Laboratory studies document a lactic acidosis. On the basis of the patient's clinical assessment and history, which type of shock does this patient most likely have?
- A. Cardiogenic
 - B. Distributive, septic
 - C. Distributive, neurogenic
 - D. Obstructive

The correct answer is B. Distributive shock caused by sepsis is characterized by reduced or increased systemic vascular resistance resulting in maldistribution of blood flow. The vasodilation and venodilation causes pooling of blood in the venous system and a relative hypovolemia. Septic shock also causes increased capillary permeability, so there is loss of plasma from the vascular space. This increases the severity of the hypovolemia. Myocardial contractility may also be depressed in septic shock. [PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Type > Distributive Shock; page 181]

38. Which assessment finding is most important in your determination of the severity of the patient's condition?
- A. Respiratory rate
 - B. Heart rate
 - C. Oxygen saturation
 - D. Blood pressure

The correct answer is D. Shock can range from mild to severe. Its manifestations are affected by the type of shock and the child's compensatory responses. Blood pressure is used to determine severity of shock; however, children with both compensated and hypotensive shock are at high risk for deterioration. The child with low cardiac output (ie, hypovolemic shock) but normal blood pressure due to vasoconstriction may have more end-organ compromise than the child with normal or increased cardiac output (ie, septic shock) and low systolic blood pressure has. [PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure); page 177]

39. Which normal saline fluid bolus is most appropriate for this patient?

- A. 10 mL/kg
- B. 15 mL/kg
- C. 20 mL/kg**
- D. 30 mL/kg

The correct answer is C. In general, isotonic crystalloid should be given in a 20 mL/kg bolus over 5 to 20 minutes. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. If you suspect cardiogenic shock, use smaller fluid boluses of 5 to 10 mL/kg given over 10 to 20 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion. Stop the infusion if such signs occur. Be prepared to support oxygenation and ventilation as necessary. [*PALS Provider Manual*, Part 9: Management of Shock > General Management of Shock > Components of General Management > Critical Concepts: Fluid Resuscitation; page 201]

40. In addition to oxygen administration and appropriate fluid resuscitation, which additional early intervention should you provide to this patient?

- A. Bronchodilator administration
- B. Corticosteroid administration
- C. Antibiotic administration**
- D. Glucose administration

The correct answer is C. Identify the presence of fever, which may indicate infection and early need for antibiotics (eg, sepsis). [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Exposure; page 59]

41. An 8-year-old child is brought to the emergency department by his mother for difficulty breathing. He has a history of asthma and nut allergies. His mother tells you that he recently ate a cookie at a family picnic. Which condition is most likely to be present in this child?

- A. Disordered control of breathing
- B. Hypovolemic shock
- C. Upper airway obstruction**
- D. Lung tissue disease

The correct answer is C. Common causes of upper airway obstruction are foreign-body aspiration (eg, food or a small object), infection, and swelling of the airway (eg, anaphylaxis, tonsillar hypertrophy, croup, or epiglottitis). [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Upper Airway Obstruction > Causes of Upper Airway Obstruction; page 124]

42. A 7-year-old child in cardiac arrest is brought to the emergency department by ambulance. No palpable pulses are detected. The child's ECG is shown here.



How would you characterize this child's rhythm?

- A. Ventricular tachycardia
- B. Pulseless electrical activity**
- C. Sinus bradycardia
- D. Ventricular escape rhythm

The correct answer is B. Pulseless electrical activity (PEA) is not a specific rhythm. It is a term describing any organized electrical activity (ie, not VF or asystole) on an ECG or cardiac monitor that is associated with no palpable pulses; pulsations may be detected by an arterial waveform or Doppler study, but pulses are not palpable. The rate of electrical activity may be slow (most common), normal, or fast. Very slow PEA may be referred to as agonal. [*PALS Provider Manual*, Part 4: Recognition and Management of Cardiac Arrest > Recognition of Cardiac Arrest > Arrest Rhythms > Pulseless Electrical Activity; page 76]

43. You are caring for patients in the emergency department. Which 2-year-old child requires immediate intervention?

- A. A child with a temperature of 37.4°C (99.3°F)
- B. A child who is grunting**
- C. A child with an SpO₂ of 95% on room air
- D. A child with a systolic blood pressure of 92 mm Hg

The correct answer is B. Grunting produces early glottic closure during expiration. Grunting is a compensatory mechanism to maintain positive airway pressure and prevent collapse of the alveoli and small airways. Grunting is a serious sign and may indicate respiratory distress or respiratory failure. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Increased Respiratory Effort; page 41]

44. A 4-year-old child is brought to the emergency department for seizures. The seizures stopped a few minutes ago, but the child continues to have slow and irregular respirations. Which condition is most consistent with your assessment?
- A. Lung tissue disease
 - B. Upper airway obstruction
 - C. Disordered control of breathing**
 - D. Lower airway obstruction

The correct answer is C. Disordered control of breathing may result from a host of conditions, including neurologic disorders (eg, seizures, central nervous system infections, head injury, brain tumor, hydrocephalus, neuromuscular disease), metabolic abnormalities, and drug overdose. Because disordered control of breathing is typically associated with conditions that impair neurologic function, these children often have a decreased level of consciousness. [*PALS Provider Manual*, Part 6: Recognition of Respiratory Distress and Failure > Identification of Respiratory Problems by Type > Disordered Control of Breathing > Causes of Disordered Control of Breathing; page 126]

Use this scenario to answer the next 2 questions:

You are caring for a 5-year-old boy with a 4-day history of high fever and cough. He is having increasing lethargy, grunting, and sleepiness. Now he is difficult to arouse and is unresponsive to voice commands. His oxygen saturation is 72% on room air and 89% when on a nonrebreathing oxygen mask. He has shallow respirations, with a respiratory rate of 38/min. Auscultation of the lungs reveals bilateral crackles.

45. Which assessment finding is consistent with respiratory failure in this child?
- A. Respiratory rate
 - B. Cough
 - C. Fever
 - D. Oxygen saturation**

The correct answer is D. Signs of probable respiratory failure include very rapid or inadequate respiratory rate; possible apnea; significant, inadequate, or absent respiratory effort; absent distal air movement; extreme tachycardia (bradycardia often indicates life-threatening deterioration); low oxygen saturation (hypoxemia) despite high-flow supplementary oxygen; decreased level of consciousness; and cyanosis. [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Breathing > Oxygen Saturation by Pulse Oximetry > Caution in Interpreting Pulse Oximetry Readings; page 47]

46. Which medication would be most appropriate?
- A. An antibiotic**
 - B. A bronchodilator
 - C. A corticosteroid
 - D. A vasopressor

The correct answer is A. Identify the presence of fever, which may indicate infection and early need for antibiotics (eg, sepsis). [*PALS Provider Manual*, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Exposure; page 59]

47. An 8-year-old child is brought to the emergency department with a 2-day history of lethargy and polyuria. The child has new-onset rapid, deep, and labored breathing. Which diagnostic test should you order first?
- A. 12-lead ECG
 - B. Arterial blood gases
 - C. Serum potassium
 - D. Blood glucose**

The correct answer is D. In a pediatric patient with altered mental status, hypoglycemia should be considered and blood glucose evaluated as soon as possible. *Altered mental status* refers to the range of mental states from agitation to coma. [PALS Provider Manual, Part 3: Systematic Approach to the Seriously Ill or Injured Child > Primary Assessment > Disability > AVPU Pediatric Response Scale; page 56]

48. You are the team leader during a pediatric resuscitation attempt. Which action is an element of high-quality CPR?
- A. Providing a compression depth of one fourth the depth of the chest
 - B. Allowing complete chest wall recoil after each compression**
 - C. Providing a compression rate of 80 to 100/min
 - D. Performing pulse checks every minute

The correct answer is B. During CPR, push fast (100 to 120 compressions/min), push hard (at least one third the depth of the anteroposterior diameter of the chest or about 2 inches in the child or about 1½ inches in an infant), allow complete chest recoil after each compression, minimize interruptions in chest compressions, and avoid excessive ventilation. [PALS Provider Manual, Part 11: Management of Arrhythmias > Management: Pediatric Bradycardia With a Pulse and Poor Perfusion > If Bradycardia and Cardiopulmonary Compromise Persist, Perform CPR (Box 3) > Foundational Facts: Perform High-Quality CPR; page 256]

49. You are evaluating a 10-year-old child who is febrile and tachycardic. The child's capillary refill time is 5 seconds. Which parameter will determine if the child is in compensated shock?
- A. Chest movement
 - B. Blood pressure**
 - C. Respiratory effort
 - D. Respiratory rate

The correct answer is B. Compensated shock refers to a clinical state in which there are clinical signs of inadequate tissue perfusion, but the patient's blood pressure is in the normal range. In this stage of shock, the body is able to maintain blood pressure despite impaired delivery of oxygen and nutrients to the vital organs. Clinical findings include tachycardia, delayed capillary refill, and decreased urine output. [PALS Provider Manual, Part 8: Recognition of Shock > Identification of Shock by Severity (Effect on Blood Pressure) > Compensated Shock; page 177]

50. A 6-year-old child is found unresponsive, not breathing, and without a pulse. One healthcare worker leaves to activate the emergency response system and get the resuscitation equipment. You and another healthcare provider immediately begin performing CPR. Which compression-to-ventilation ratio do you use?
- A. 15:1
 - B. 15:2**
 - C. 30:1
 - D. 30:2

The correct answer is B. If 2 rescuers are present for the resuscitation attempt of an infant or a child, use a compression-to-ventilation ratio of 15:2. [*PALS Provider Manual*, Part 2: Review of BLS and AED for Infants and Children > BLS for Infants and Children > Infant/Child Chest Compressions > Compression Rate and Compression-to-Ventilation Ratio; page 20]