NBRC-NPS Practice Questions

1. All of the following criteria are components of a comprehensive initial patient assessment EXCEPT

a. Breath sounds and respiratory rate
b. Medical history and history of present illness
c. Laboratory results and SPO_2
d. Allergies and recent exposures

2. What is the purpose of imaging studies performed on neonatal and pediatric patients?

a. Diagnostic
b. Therapeutic
c. Interventional
d. All of the above

3. A respiratory therapist is called to the emergency room to evaluate a neonatal patient's respiratory status. All of the following symptoms are signs of respiratory distress in an infant EXCEPT

a. Accessory muscle use
b. Intercostal retractions
c. Grunting
d. Nasal flaring

4. Which one of the following statements is true regarding sleep studies?

a. Sleep studies are conducted in the daytime and nighttime hours.
b. Sleep studies are only performed on adult patients.
c. Sleep studies are the only way to diagnose sleep apnea.
d. Sleep studies only measure occurrences of airway obstruction.

5. All of the following statements are true regarding neurological function and respiratory status EXCEPT

a. Central nervous system insufficiency can result in respiratory failure.
b. Neurological status is not directly related to respiratory status.
c. Neurological disorders can cause abnormal breathing patterns.
d. Neurological status directly affects the successful intubation of a patient.

6. Congenital heart defects of the newborn can cause all of the following signs and symptoms EXCEPT

a. Desaturation
b. Cyanosis
c. Respiratory failure
d. Wheezing

7. A 4-year-old female presents to the ER with the following vital signs: respiratory rate 36, heart rate 157, and oxygen saturation 88%. The patient has had a viral illness for several days and is currently experiencing a high-pitched "seal's bark" cough. The healthcare team suspects croup. Which of the following actions would help the team make that diagnosis?

a. Listening to breath sounds at the patient's neck
b. Performing a peak flow measurement
c. Performing a huff cough maneuver
d. Obtaining a chest X-ray

8. All of the following are signs and symptoms of an asthma exacerbation EXCEPT

a. Persistent cough
b. Orthopnea
c. Throat clearing
d. Rhonchi

9. The respiratory therapist is called to the ER for a trauma alert due to a motor vehicle accident. A 14-year-old boy experienced blunt-force trauma to the chest during the accident and is currently being transported to the ER for evaluation. As a result of the accident, the respiratory therapist should anticipate treating all of the following conditions EXCEPT

a. Pneumothorax
b. Bronchospasm
c. Pulmonary contusion
d. Ventilatory failure

10. Apnea is defined as the absence of breathing for

a. At least 10 seconds
b. At least 15 seconds
c. At least 20 seconds
d. At least 30 seconds

11. All of the following neonatal disorders are characterized by excessive fluid EXCEPT

a. Bronchopulmonary dysplasia
b. Apnea of prematurity
c. Pulmonary hypertension
d. Kidney failure

12. Which of the following choices best describes the effects of diabetic ketoacidosis on respiratory status?

a. Diabetic ketoacidosis does not cause respiratory failure but can cause changes in neurological status.
b. In diabetic ketoacidosis, the patient's pH falls, carbon dioxide rises, and PO_2 falls.
c. High blood sugar causes the release of ketones, acid–base mismatch, and respiratory failure.
d. The acid–base balance has no effects on respiratory status.

13. All of the following congenital abnormalities of the digestive system require immediate surgical intervention EXCEPT

a. Umbilical hernia
b. Diaphragmatic hernia
c. Esophageal atresia
d. Tracheoesophageal fistula

14. A 33-week-gestation infant is admitted to the neonatal intensive care unit (NICU). The patient is experiencing aspiration, poor latch, desaturation, and coughing during feeds. Which one of the following interventions is appropriate to initiate at this time?

a. Place the patient on 100% oxygen during feeds.
b. Change the patient's formula.
c. Increase the frequency and duration of feeds.
d. Place a feeding tube.

15. All of the following complications are associated with necrotizing enterocolitis in the neonate EXCEPT

a. Abdominal distension
b. Respiratory distress
c. Jaundice
d. Bloody stools

16. The respiratory therapist is called to the delivery room for the birth of a full-term infant. The fetus is determined to be in the breech position. The physician attempts to turn the infant and delivers the infant with the aid of forceps. The newborn is cyanotic and apneic. The physician suspects a spinal cord injury due to the difficult delivery. Which of the following choices is the likely location of the injury?

a. Above C5
b. Above C6
c. Below C5
d. Below C3

17. All of the following conditions can impede the accurate measurement of end-tidal CO_2 EXCEPT

a. Apnea
b. Hypoventilation
c. Airway obstruction
d. Oxygen delivery

18. Which one of the following choices is not a step in drawing a blood gas from an indwelling catheter in a neonatal patient?

a. Obtain a sample of blood to discard with a heparinized syringe.
b. Flush the port with normal saline.
c. Place the blood gas sample in an ice slurry for transport.
d. Remove the cap from the three-way valve and clean the port.

19. Which of the following choices is not a step in drawing a capillary blood gas from a neonatal patient?

a. Place a heel warmer on the patient several minutes before beginning the procedure.
b. Squeeze the heel to release a drop of blood.
c. Remove any clots in the capillary tube.
d. Prick the heel with a hospital-approved lancet.

20. A respiratory therapist is called to the pulmonary function lab to perform simple spirometry on a 4-year-old patient. The patient has a history of unexplained cough that worsens at night. The patient is talkative and cooperative with the hospital staff. Which one of the following choices is not a step in the preparation of a 4-year-old patient for spirometry?

a. The respiratory therapist should notify the doctor that the patient is too young for spirometry.
b. The respiratory therapist should ensure that the equipment is calibrated.
c. The respiratory therapist should introduce themselves to the patient and family.
d. The respiratory therapist should explain the procedure.

21. What is the purpose of mean inspiratory pressure testing?

a. To measure the mean airway pressure (MAP) during synchronized intermittent mandatory ventilation (SIMV) ventilation
b. To measure the patient's static compliance
c. To measure the strength of the patient's inspiratory muscles
d. To measure the effects of bronchospasm during an asthma episode

22. Which one of the following statements is true regarding peak flow meter use in asthmatic patients?

a. Peak flow zones are most accurate when based on a patient's predicted number.
b. Many patients never achieve their predicted peak flow number when asymptomatic.
c. A patient's predicted peak flow value is based on his or her weight and height.
d. Peak flow monitoring is required of all asthmatic patients older than age 4.

23. All of the following choices are benefits of tracheostomy tube placement for mechanical ventilation EXCEPT

a. Reduction in aspiration risk
b. Ability to bypass upper airway obstructions
c. Less airway trauma with long-term ventilation
d. Patients can be mechanically ventilated at home

24. All of the following choices are benefits to oral airway placement EXCEPT

a. Patients are unable to bite down on an endotracheal tube.
b. Lower airway obstructions can be bypassed.
c. Suction catheters can be fed through the center channel.
d. Resuscitation masks fit over the oral airway.

25. A respiratory therapist is assigned a cystic fibrosis patient who is scheduled for the following therapies: chest physiotherapy (CPT) via vest for 20 minutes, 2.5 albuterol nebulizer Q4 h, 0.5 mg budesonide nebulizer BID. The patient is due for all three therapies. Which therapy should be provided LAST?

a. 2.5 albuterol nebulizer
b. 0.5 mg budesonide nebulizer
c. CPT via vest for 20 minutes
d. These therapies can be provided in any order.

26. Which of the following choices is NOT true regarding positive expiratory pressure (PEP) therapy?

a. Expiratory pressure is applied to the airway via oscillation.
b. PEP therapy is delivered via a handheld device known as a flutter valve.
c. The purpose of PEP therapy is to relieve bronchospasm and airway obstruction.
d. PEP therapy maneuvers should continue for up to 20 breaths per session.

27. All of the following conditions are contraindications for chest physiotherapy (CPT) EXCEPT

a. Chest tube placement
b. Eating a meal 10 minutes prior to therapy
c. History of flail chest
d. Rib fracture

28. The respiratory therapist is called to perform CPT on a patient with a history of syncope. The patient is admitted for pneumonia and shortness of breath. The physician's order asks for CPT with postural drainage of the lower lobes. In which position should the patient be placed to accomplish this request?

a. Supine
b. Prone
c. Head of bed elevated
d. Trendelenburg

29. The respiratory therapist is called to perform intrapulmonary percussive ventilation (IPV) therapy on a patient with pneumonia. The respiratory therapist prepares the equipment and starts the therapy. The IPV machine is not delivering any pressure or mist to the patient. All of the following troubleshooting steps would be helpful at this time EXCEPT

a. Ensuring an adequate power source
b. Ensuring an adequate gas source
c. Checking all connections
d. Sending the machine for repair

30. Which one of the following steps in a cough-assist maneuver is incorrect?

a. Place the palms of your hands on either side of the patient's navel.
b. Instruct the patient to exhale completely.
c. Push the patient's abdomen up and in during the cough attempt.
d. Sit the patient up or have them lie down.

Answer Key and Explanations

1. C: SPO_2 measurement, the evaluation of blood oxygen saturation, is a vital sign that is part of a comprehensive initial patient assessment; however, laboratory results are often not available during the patient's initial presentation to the ER. Laboratory testing is a secondary tool used to further evaluate a patient once the initial assessment has been made. Therefore, C is the correct answer.

2. D: There are numerous types of imaging studies that can be performed on neonatal and pediatric patients. Some imaging studies are interventional and therapeutic. This can include studies such as cardiac catheterization and angiography, both of which are used for diagnostic purposes as well as interventional and therapeutic reasons. Other imaging studies, such as chest X-rays and MRI scans, are used solely for diagnostic purposes, allowing healthcare providers to noninvasively measure, evaluate, and examine the internal structures of the body.

3. A: Accessory muscle use is a common sign of respiratory distress in adults and older pediatric patients. These patients often use secondary muscles in the neck and chest to help them breathe during episodes of respiratory distress. Infants in respiratory distress often present with several signs and symptoms including intercostal or subcostal retractions, grunting, and nasal flaring.

4. C: Sleep apnea can only be definitively diagnosed through sleep studies. These diagnostic interventions measure several criteria, such as heart rate, respiratory rate, occurrences of apnea, duration of apnea, oxygen saturation, and other measurements. Therefore, answer D is incorrect. Option A is incorrect because sleep studies are only performed during "regular" sleeping hours during the evening and nighttime. Option B is incorrect because pediatric patients may also undergo sleep study testing especially if sleep apnea is suspected.

5. B: A patient's neurological status is directly related to a patient's respiratory status. For example, if a patient has central nervous system insufficiency, he or she may suffer from respiratory failure due to decreased respiratory drive. Neurological disorders may also cause abnormal breathing patterns, which also can result in respiratory insufficiency or failure. Finally, neurological status can directly affect the successful intubation of a patient; when a patient is fully conscious and aware of their surroundings, they will fight intubation and ventilation. However, when neuromuscular blocking agents are administered to "change" their neurological status, the patient is easily intubated with no gag reflex or "fighting" of the procedure or mechanical ventilator.

6. D: Congenital heart defects affect the oxygen delivery to the tissues of the body. Hearts with congenital defects or abnormalities are often unable to effectively perfuse the body's organ systems. This causes symptoms such as desaturation (a low oxygen level in the blood), cyanosis (blue-tinged extremities, lips, or other appendages), and respiratory failure. Wheezing is not a symptom of a heart defect because wheezing is caused by bronchospasm and airway obstruction.

7. A: Croup is an acute viral illness of the upper airway characterized by constriction, swelling, respiratory distress, and a harsh, high-pitched "seal's bark" cough. Increased work of breathing and respiratory distress are often results of the underlying croup infection. Croup is diagnosed in part by auscultating the patient's neck because this is the location where the constriction occurs. If a patient has croup, the clinician will hear stridor and whistling at the neck during respiration.

8. D: Rhonchi, also known as coarse breath sounds, are not a common sign of an asthma exacerbation. Common breath sounds in asthmatic patients include diminished breath sounds,

wheezing, and silent chest. Persistent cough is a common asthma symptom, and, in fact, it can be a patient's only symptom. It is important for clinicians to understand that many asthmatic patients never wheeze. Orthopnea, the inability to lie flat without shortness of breath, is a common asthma symptom, especially at night. Finally, many asthmatic patients experience throat clearing due to the excessive mucus production that is common in asthma exacerbations.

9. B: Bronchospasm is not a common symptom of blunt-force trauma to the chest. Bronchospasm is caused by airway obstruction, whereas chest trauma causes changes to the patient's compliance due to pulmonary contusions, pneumothorax, and other acute injuries to the chest wall. These serious injuries can result in respiratory failure and the need for ventilatory support including rescue breathing and mechanical ventilation.

10. C: Apnea is defined as the absence of breathing for at least 20 seconds.

11. B: Apnea of prematurity is not characterized by excessive fluid. Patients with bronchopulmonary dysplasia, pulmonary hypertension or congestive heart failure, and kidney failure all have problems regulating the fluid balance within the body. These patients often are fluid "overloaded," and this excessive fluid can contribute to respiratory failure and distress.

12. C: In diabetic ketoacidosis, high blood sugar causes the release of ketones, which results in an acid–base mismatch and impending respiratory failure. These patients' blood gases will show a rising pH and CO_2 and a falling PO_2. Diabetic ketoacidosis and its resulting acid–base mismatch have a direct effect on respiratory status, often causing impending respiratory failure that must be treated immediately. If diabetic ketoacidosis is not immediately treated, the patient's impending respiratory failure will quickly transition into full respiratory arrest.

13. A: Umbilical hernias are common disorders in the neonatal population. Although umbilical hernias can become complicated (strangulated) in some cases, generally speaking, it is considered safe to wait for the hernia to resolve spontaneously as the patient grows. Therefore, immediate surgery is not required. For more serious congenital defects of the digestive system, such as diaphragmatic hernia, esophageal atresia, and tracheoesophageal fistula, immediate surgery is required to resolve the defect and prevent complications.

14. D: Of the above options, D is the best choice. This patient is unable to adequately and safely feed. The current condition presents an aspiration pneumonia risk, which is especially dangerous for this preterm infant. Option A is incorrect because although supplemental oxygen during feeds may be helpful, it is never appropriate to automatically place a neonatal patient on 100% oxygen. Oxygen should be used in the lowest possible concentration to minimize retinopathy and other complications associated with oxygen use. Option B is incorrect because there is no indication that this patient has an allergic reaction or other adverse reaction in response to the type of formula given. Option C is incorrect because although smaller, more frequent feeds may be helpful in some cases, a longer duration of feeding is not helpful. This patient has respiratory symptoms during feedings, and prolonging the feeding may exacerbate those symptoms.

15. C: Jaundice is not a common symptom of necrotizing enterocolitis. Jaundice is a symptom of hyperbilirubinemia. Necrotizing enterocolitis is a bacterial infection of the bowels that can cause abdominal distension, bloody stools, respiratory distress, and gas buildup in the stomach and intestines.

16. A: When a spinal cord injury causes complete respiratory arrest and lack of respiratory drive, the injury is likely located above C5. In injuries that are located lower than C5 on the spinal cord,

the resulting impairments often include pneumonia, reduced respiratory effort, and respiratory insufficiency.

17. D: Accurate end-tidal CO_2 monitoring is dependent upon several factors. The patient must be breathing adequately with no airway obstructions present. Apnea, hypoventilation, and hyperventilation all adversely affect the accurate measurement of end-tidal CO_2. Oxygen delivery, however, has no effect on end-tidal CO_2 measurement.

18. A: When obtaining a blood sample from an indwelling catheter for blood gas analysis, the clinician must first remove the cap from the three-way valve on the end of the patient's catheter and clean the port. He or she then inserts a nonheparinized 5 mL syringe and turns the tap to open the port. The clinician then obtains a sample of blood, removes the syringe, closes the port, and disposes of the sample. Next, the clinician repeats the procedure with a heparinized syringe and obtains a blood sample for blood gas analysis. The clinician closes the port and removes the syringe. A saline flush is attached, the port is opened, and saline is injected into the port to flush the system. The port is then closed, and the blood gas sample is placed on ice and sent to the lab for analysis. Answer A is incorrect because the syringe should not be heparinized.

19. B: Clinicians must never squeeze the heel when obtaining a capillary blood gas. When performed correctly, the blood will be free flowing and will not require squeezing. Squeezing of the foot produces inaccurate blood gas testing results. To properly obtain a capillary blood gas sample from a neonatal patient, the clinician warms the neonate's heel by applying a heel warmer for several minutes. The clinician then cleans the lateral side of the patient's heel, punctures the heel with a lancet, and allows the blood droplet to fall into the heparinized capillary tube without interference. The clinician must remove any air bubbles or blood clots in the sample. The clinician then places the sample on ice and transports it to the lab for analysis.

20. A: Although spirometry is commonly performed on patients who are 5 years of age and older, there is no contraindication for testing based solely on age. The maturity and ability of the patient to perform tasks is the most important factor in deciding whether spirometry can be performed on a patient. Therefore, the clinician should prepare the equipment, introduce him- or herself, and explain the procedure. In this scenario, the clinician should notify the physician that testing is not possible only after the test has been attempted.

21. C: Mean inspiratory testing requires the patient to inhale against a closed circuit. The patient's negative inspiratory force is measured by a manometer that is attached to the circuit during the procedure. This value indicates the strength of the patient's inspiratory muscles, and it is a common tool that is used to help determine a patient's readiness to be weaned from a mechanical ventilator.

22. B: Peak flow testing is helpful for some patients with asthma. The patient exhales hard and fast into a peak flow meter, and the meter gives the patient a numerical result. Patients can track these readings to determine when their asthma is exacerbated (the peak flows drop) or when their asthma is improving (the peak flows rise). Answer A is incorrect because peak flow monitoring zones should be based on the patient's personal best number, i.e., the highest peak flow value they have every achieved. This is the number to strive for. Option B is incorrect because most patients never achieve their predicted peak flow value because this number is based on their height and sex in a healthy, nonasthmatic individual. Option D is incorrect because peak flow monitoring is not required of any asthmatic patient; instead, it is a helpful tool for some patients, especially those who are poor perceivers of symptoms and severity.

23. A: The risks associated with tracheostomy tube usage in the mechanically ventilated patient include infection risk and risk of aspiration. The benefits associated with tracheostomy tube use includes less airway trauma with long-term mechanical ventilation, ability to bypass upper airway obstructions and abnormalities, and patients can be mechanically ventilated via tracheostomy in the home environment.

24. B: Oral airways, commonly known as bite blocks, are used for several purposes in the healthcare setting. Oral airways can be used to prevent a patient from biting down on an endotracheal tube or repositioning the patient's tongue to prevent it from falling back into the oropharynx. They can also be used to help bypass an upper airway obstruction or abnormality, and patients can be suctioned through the center channel on the airway. Resuscitation masks also fit over the airway, allowing the clinician to manually ventilate a patient with the bite block in place. Option B is the correct answer because oral airways alleviate upper airway obstructions, not lower airway obstructions.

25. C: CPT should always be performed after nebulizer therapy unless the physician has requested a different order of therapy. First, the clinician should administer albuterol because this is a bronchodilator, which will relax the airway. Next, the clinician would administer budesonide, which is a localized inhaled steroid that reduces airway inflammation. Finally, the clinician would administer vest therapy because it is designed to help the patient expectorate mucus. The patient would be more likely to expectorate mucus after the administration of a bronchodilator therapy when the airways are more relaxed.

26. C: Positive expiratory pressure (PEP) therapy is an intervention in which a patient exhales into a PEP device (also known as a flutter valve). The PEP device oscillates during the patient's exhalation, delivering the oscillatory effect to the patient's airway. This helps to dislodge mucus within the lungs and allows the patient to expectorate it more easily. Option C is the correct answer because PEP therapy is used for the expectoration of airway secretions and has no effect on bronchospasm or other airway obstructions.

27. C: A history of lung injury or infection including flail chest is not necessarily a contraindication for chest physiotherapy (CPT). If the injury has healed and no further damage to the chest structures is present, then CPT can be administered. CPT is the therapeutic tapping or cupping on a patient's chest to help the patient expectorate mucus. This therapy is contraindicated in patients who have eaten within 30 minutes to an hour of therapy, patients with chest injuries such as rib fracture, and patients with chest tubes in place.

28. B: When draining the lower lobes, the patient should be placed in the prone position so that the affected area is facing up. The respiratory therapist can then perform percussion therapy on that area, allowing the lobes to drain while turning the patient side to side. Because Trendelenburg is a position in which the patient's head is down, and therefore the patient's lower lobes are up, the patient is inverted, which may cause lightheadedness and other complications. This is especially true in patients with a history of fainting (syncope).

29. D: Before sending the machine for repair, the clinician should troubleshoot the machine thoroughly. This can include checking that the power and gas sources are adequate; checking all circuit and nebulizer connections to ensure a tight fit; and looking for leaks, kinks, and obstructions in the circuitry. Only then should the respiratory therapist send the machine for repair.

30. B: A cough assist is performed by having the patient either lie down or sit up. The clinician places the palms of his or her hands on either side of the patient's navel, and the patient is