

# Nursing NBCRNA-CRNA

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# Latest Version: 6.1

## Question: 1

The CRNA is filling the vaporizer on the anesthesia machine in preparation for a surgical case. Which of the following characterizes an advantage of the use of an Aladin vaporizer located on an Aisys anesthesia machine?

- A. The required key makes the vaporizer specific to the use of isoflurane
- B. A built-in valve prevents overfilling
- C. The Aladin can be filled by use of a funnel apparatus
- D. They are not sensitive to tipping

**Answer: D**

Explanation:

A vaporizer is utilized during the delivery of volatile anesthetics to convert the anesthetic liquid into its vapor (gas) form. Typically, vaporizers are constructed of metal, often copper or bronze. Depending upon when the vaporizer was constructed, it can be filled using a funnel, or may require a keyed device specific to the individual anesthetic gas. Modern vaporizers are more likely to require the keyed device, as this prevents an accidental filling of a vaporizer with a volatile anesthetic it was not intended to process.

Other risks of vaporizer usage include overfilling, loss of calibration, leaking of the anesthetic agent, and tipping of the device. The Aladin vaporizer, which is present on Aisys anesthesia machines, is not impacted by tipping. All other vaporizers must be serviced in the event of tipping more than 45 degrees from upright. The Aladin vaporizer may be used in the delivery of isoflurane, enflurane, and halothane, all of which require a keyed device specific to the individual gas used. Sevoflurane and desflurane may also be used in the Aladin vaporizer, but are loaded via an alternate mechanism.

## Question: 2

Which of the following terms describes the condition that occurs when the placenta implants completely through the myometrium?

- A. Placenta accreta
- B. Placenta increta
- C. Placenta percreta
- D. Placenta previa

**Answer: C**

Explanation:

In pregnancy, the placenta normally implants into the endometrium. When it implants on or into the myometrium, separation of the placenta from the uterus becomes increasingly difficult and may result in hemorrhage at the time of attempted placental delivery. When the placenta implants completely through the myometrium, it is called placenta percreta.

In placenta accreta, the placenta is implanted on the myometrium. In placenta increta, the placenta is implanted into the myometrium. In placenta previa, the placenta is inserted partially or totally over the cervix.

### Question: 3

Which of the following statements is true about somatosensory evoked potentials?

- A. They monitor the dorsal (sensory) spinal column
- B. They are stimulated centrally and recorded peripherally
- C. Signal averaging with repetitive stimuli is not required
- D. They assess the integrity of the descending motor pathway in the ventral spinal cord

**Answer: A**

Explanation:

Somatosensory evoked potentials (SSEPs) monitor the dorsal (sensory) spinal column and are stimulated peripherally and recorded centrally.

Motor evoked potentials (MEPs) assess the integrity of the descending motor pathway in the ventral spinal cord. Because of the presence of spontaneous electroencephalogram activity, summation followed by signal averaging of repetitive stimuli is necessary to extract meaningful signals with SSEP. Repetitive stimuli and signal averaging is not needed with MEP.

### Question: 4

All the following electrocardiogram changes are associated with hyperkalemia except:

- A. Tall, peaked T-waves
- B. Widening of the QRS complex
- C. Prolonged PR interval
- D. Prolonged QT interval

**Answer: D**

Explanation:

The QT interval is not prolonged in hyperkalemia. Due to the prolonged repolarization of ventricular Purkinje fibers, a prominent U-wave occurs that is frequently superimposed upon the T-wave and produces the appearance of a prolonged QT interval.

As the potassium concentration increases, the electrocardiogram will show tall, peaked T-waves, then the PR interval becomes prolonged, followed by a decrease in the P-wave amplitude. Finally, the QRS complex widens into a pattern resembling a sine wave as a prelude to a cardiac standstill.

### Question: 5

Which of the following is correct regarding administering opioids to patients who are near death and expected to die? (Select 3.)

- A. Opioids may increase the time to death
- B. Healthcare professionals are required to administer opioids for end-of-life care, even if it causes them moral distress
- C. Opioids can be given for the purpose of reducing the time to death, as long as they also promote patient comfort
- D. The use of opioids at the end of life is medically indicated
- E. The use of opioids at the end of life is morally indicated

**Answer: A,D,E**

Explanation:

The use of opioids at the end of life is both medically and morally indicated. While opioids may hasten death, they may also increase the time to death in dying patients in some situations by decreasing patient distress. While opioids are appropriate for end-of-life care, other healthcare team members should be assigned to a patient if it causes a particular provider moral distress. Opioids should only be given to promote patient comfort, not for deliberately reducing the time to death.

### Question: 6

Which of the following statements are correct regarding how respiratory variables change as a pediatric patient ages?

Select all that apply.

- A. The respiratory rate slows
- B. Minute ventilation increases
- C. The dead space/tidal volume ratio increases
- D. The dead space/tidal volume ratio decreases
- E. The number of alveoli remains constant

**Answer: A,B**

Explanation:

As a pediatric patient ages, their respiratory rates slows, their minute ventilation increases, and the number of alveoli increases. While both tidal volume and dead space increase due to growth, the ratio between the two remains constant as growth occurs.

### Question: 7

All the following are symptoms of congenital diaphragmatic hernia except:

- A. Bradycardia
- B. Cyanosis
- C. Scaphoid abdomen
- D. Unilateral breath sounds

**Answer: A**

Explanation:

Tachycardia, not bradycardia, is a symptom of congenital diaphragmatic hernia.

Other symptoms often include the following:

- Cyanosis
- Scaphoid (concave) abdomen
- Tachypnea
- Unilateral breath sounds
- Rarely, bowel sounds in the thorax

### Question: 8

Which of the following treatments is most likely to be necessary if a spinal hematoma develops?

- A. Needle aspiration of the hematoma
- B. Decompressive laminectomy
- C. Treatment is unlikely to be necessary
- D. Decompressive discectomy

**Answer: B**

Explanation:

A decompressive laminectomy is most likely to be necessary if a spinal hematoma develops and should be performed without delay in most situations. A decompressive discectomy is not the correct treatment. A spinal hematoma is very unlikely to be removed using needle aspiration of the hematoma. Treatment is necessary to avoid complications caused by compression from the hematoma.

### Question: 9

The treatment of hypercalcemia includes all the following except:

- A. Rehydration with saline followed by furosemide
- B. Glucocorticoids in the presence of vitamin D-induced hypercalcemia
- C. Brisk diuresis with a loop diuretic followed by rehydration with saline
- D. Following rehydration and diuresis, treatment with bisphosphonates or calcitonin if needed

**Answer: C**

Explanation:

Premature diuretic therapy before rehydration can aggravate hypercalcemia because of additional volume depletion. The most effective initial treatment is rehydration followed by a brisk diuresis with the administration of an intravenous saline infusion and a loop diuretic to accelerate calcium excretion. Although hydration and diuresis may remove the potential risk of cardiovascular and neurological complications of hypercalcemia, the serum calcium usually remains elevated above normal. Additional therapy with a bisphosphonate or calcitonin may be required to further lower the serum calcium. Additional treatment depends on the underlying cause and may include glucocorticoids in the presence of vitamin D-induced hypercalcemia, such as granulomatous disease states.

### Question: 10

Which of the following statements is true about hypertrophic cardiomyopathy?

- A. Affected patients display systolic dysfunction.
- B. Supraventricular arrhythmias are rarely associated with the condition.
- C. It is characterized by fluid volume overload.
- D. It is characterized by excessive overgrowth of the heart muscle, especially of the intraventricular septum near the aortic valve.

**Answer: D**

Explanation:

Hypertrophic cardiomyopathy (HCM) is the most common genetic cardiovascular disease. It is characterized by left ventricular hypertrophy, especially in the upper intraventricular septum near the aortic valve.

Because of hypertrophy, the walls of the heart stiffen, the mitral and aortic valve functions are impaired, and normal blood flow from the heart is restricted. The condition is not characterized by fluid volume overload. HCM patients display diastolic dysfunction (rather than systolic), which is reflected by increased left ventricular end-diastolic pressures. Both ventricular and supraventricular arrhythmias are common in patients with HCM.

### Question: 11

Which of the following describes the second gas effect most accurately?

- A. The second gas effect is highly dependent upon the concentration of administered volatile anesthetics
- B. Nitrous oxide administered concurrently with isoflurane causes significantly faster uptake of isoflurane
- C. Nitrous oxide administered concurrently with sevoflurane causes significantly faster uptake of sevoflurane
- D. The second gas effect does not occur during emergence

**Answer: B**

Explanation:

The second gas effect is so named because of the effect that the second gas has upon the uptake of the first administered gas. This second gas is sometimes referred to as a companion gas and can be used to modulate speed of uptake of volatile anesthetics. Typically, nitrous oxide is administered as the second gas due to its own rapid uptake, and when administered with a volatile anesthetic with a slow uptake, such as isoflurane, the uptake of the initial gas (isoflurane) is significantly sped up. Administering nitrous oxide with an already rapid volatile anesthetic, such as sevoflurane, the uptake of the first gas (sevoflurane) is increased, but not significantly. The second gas effect also occurs during emergence, as nitrous oxide's rapid elimination leads to accelerated removal of the accompanying volatile agent. The second gas effect is not dependent upon the concentration of the first gas administered.

### Question: 12

Which of the following traits of video laryngoscopy makes it an ideal teaching tool for performing difficult pediatric intubation?

- A. It allows for replay and review in a controlled environment
- B. Both the learner and the instructor can see what is happening
- C. It mimics direct laryngoscopy
- D. It is simpler to learn than direct laryngoscopy

**Answer: B**

Explanation:

Video laryngoscopy does allow both the learner and the instructor to see what is happening, providing the instructor with the opportunity to provide live feedback. It is not necessarily simpler to learn than direct laryngoscopy. Even if it were, this is not what makes video laryngoscopy an ideal teaching tool. It does not mimic direct laryngoscopy, as it does not require aligning the oral, pharyngeal, and laryngeal axes. Video laryngoscopy does not record the video or allow for replay.

### Question: 13

Which of the following considerations is correct when providing anesthesia care to a patient receiving radiation therapy?

- A. The anesthesia provider will not continuously be in direct proximity to the patient
- B. The anesthesia provider will need to be at least ten feet from the radiation source when providing care
- C. The anesthesia provider will need to measure the amount of time they spend with the patient while therapy is being administered
- D. The anesthesia provider will need to wear a lead apron while providing care to the patient

**Answer: A**

Explanation:

Radiation therapy requires heavy shielding using lead walls that make it impossible for the anesthesia provider to be in direct proximity to the patient. Remote monitoring and care will be necessary. Wearing a lead apron, limiting time exposed to radiation, or keeping a distance from the radiation source are not adequate protection measures when radiation therapy is being provided.

### Question: 14

Which of the following are malabsorptive procedures performed to therapeutically treat obesity? Select all that apply.

- A. Partial colectomy
- B. Jejunioileal bypass
- C. Biliopancreatic diversion
- D. Gastric banding
- E. Sleeve gastrectomy

**Answer: B,C**

Explanation:

Jejunioileal bypass and biliopancreatic diversion are both malabsorptive procedures that are performed to therapeutically treat obesity. A partial colectomy is likely to cause malabsorption; however, this surgical option is not used to treat obesity, but rather to treat some pathologies affecting the large intestines. Gastric banding and sleeve gastrectomy are restrictive procedures, not malabsorptive procedures.

### Question: 15

Which of the following best describes the rationale for using phenylephrine instead of ephedrine to treat hypotension in parturient patients?

- A. It decreases the risk of fetal acidosis
- B. Ephedrine is actually preferred over phenylephrine
- C. It decreases the maternal risk of shock
- D. It causes greater improvement of maternal mean arterial pressure

**Answer: A**

Explanation:

While ephedrine has been used to treat hypotension in parturient patients, phenylephrine has been shown to be an effective treatment method that decreases the risk of fetal acidosis when compared to ephedrine. Both ephedrine and phenylephrine decrease the maternal risk of shock and improve mean arterial pressure and neither of these potential benefits explain why phenylephrine is favored over ephedrine.



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