

## Answers to Assessment in Action and Points to Ponder

### Section 8: ALS Techniques

#### Chapter 39: Advanced Airway Management

##### *Assessment in Action*

1. B. remove the oral airway.

Before you can effectively access the oropharynx for suctioning, you must first remove the oropharyngeal airway. Leaving the oral airway in place will not allow full access to the airway and adequate clearance of vomitus.

2. D. It impairs gas exchange in the lungs.

Any fluid in the lungs—vomitus, blood, or other secretions—will impair effective gas exchange by decreasing diffusion of gases across the alveolar-capillary membrane.

3. C. 30 seconds.

In the adult patient, a single intubation attempt should not exceed 30 seconds. Prolonged intubation attempts often result in worsened hypoxia and exacerbation of the patient's condition. Remember, multiple intubation attempts are generally not harmful to the patient; however, prolonged individual attempts are.

4. C. It provides additional oxygen for the brain and heart.

Preoxygenation of a patient prior to attempting endotracheal intubation will provide the patient's brain and heart an oxygen reserve, which offsets the hypoxia that commonly will occur when the patient is not being ventilated.

5. D. Esophageal Tracheal Combitube

The Esophageal Tracheal Combitube (ETC) features two individual lumens within one tube. This allows the EMT-B to ventilate the patient's lungs regardless of where the tube is positioned when inserted into the airway.

6. C. Sellick maneuver

Applying posterior pressure to the cricoid cartilage (Sellick maneuver) occludes the esophagus, which reduces the incidence of vomiting when ventilating a patient with a BVM device. It also facilitates a laryngoscopic view of the vocal cords by forcing the larynx posteriorly—especially in patients whose larynx is anterior.

7. D. the epigastrium and both lungs.

To ensure that the ET tube has not inadvertently entered the esophagus, you must auscultate over the epigastrium; gurgling sounds should not be heard. The presence of clear and equal breath sounds bilaterally and absent epigastric sounds indicates correct placement of the ET tube.

8. A sudden deterioration in an intubated patient's condition, such as increasing cyanosis and a decreasing oxygen saturation, indicates that the ET tube has become dislodged or is obstructed with secretions. In either case, you must immediately reauscultate breath sounds and epigastric sounds to ensure proper placement. Tracheobronchial suctioning will be necessary if the ET tube is occluded.

9. The body's natural response to hypoxia is tachycardia—a compensatory effect of the sympathetic nervous system. When a hypoxic patient is adequately ventilated, hypoxia decreases and the heart need not beat as fast to maintain adequate oxygenation.

10. The distal cuff on an ET tube is designed to provide a seal between the ET tube and the tracheal wall. This prevents secretions, blood, and other liquids from entering the lungs. The distal cuff is NOT designed to secure the ET tube in place. To check the integrity of the distal cuff, you should assess the pilot balloon on the proximal end of the ET tube. If the pilot balloon is inflated, then the distal cuff is still inflated.

*Points to Ponder*

The need to maintain a patent airway and ensure effective oxygenation and ventilation cannot be overemphasized. You must always have the necessary equipment to maintain the patient's airway and administer oxygen or support ventilations as needed, regardless of the type of call you are responding to.

The patient in this scenario required aggressive airway management; however, because BVM ventilations were ineffective, another method of ventilatory support was required. The absence of a pocket mask—a simple device that should be in any airway kit—has clearly placed the EMT-Bs in a treatment dilemma.

Although both are trained to intubate, such an advanced procedure should not be performed without physician authorization; however, because medical control is unavailable and the paramedics will not be at the scene for 15 minutes, the patient's airway must be definitively protected so that ventilations can continue. Therefore, in the best interest of the patient—who will

obviously die without ventilatory support—the EMT-Bs should perform endotracheal intubation, continue ventilations, and rapidly transport the patient.

As soon as the patient has been delivered to the emergency department, the EMT-Bs must contact medical control and apprise him or her of the situation.

## **Chapter 40: Assisting With Intravenous Therapy**

### *Assessment in Action*

#### 1. D. blood pressure

It is important to check clarity of fluid, expiration date, and type of solution selected. It is also important to note that the packaging is intact and that there aren't any leaks in the bag.

#### 2. A. 60-gtt set

The microdrip set is the 60-gtt set in which 60 gtt makes 1 mL of fluid. These sets are used mostly for children and for medical patients who do not require large amounts of fluids and may need medications delivered through the IV.

#### 3. C. Constricting band

The bioclusive dressing helps keep the IV insertion area clean and visible for future inspection, and clear tape is preferred for visual purposes. A Kling bandage is a good option for patients who are diaphoretic because the tape does not stick to their skin. Be sure to keep the insertion site visible if possible.

#### 4. B. Low blood pressure

Kinked tubing, closed valves, the height of IV bag, catheter misplacement, and occlusions are all possible causes of diminished IV flow.

5. A. Explain the benefits and risks of IV therapy. If the patient is alert and oriented to person, time, and place and still refuses, have the patient sign a refusal.

The best way to approach is to explain the benefits and risks of IV therapy. If the patient is alert and oriented to person, time, and place, have the patient sign a refusal. Holding an alert patient down and inserting an IV against his or her will constitutes assault and battery.

6. D<sub>5</sub>W. Lactated Ringer's and normal saline are used for administering fluid.

7. Possible causes include allergic reaction, air embolus, catheter shear, and circulatory overload. Other signs will help determine the actual cause. An allergic reaction may also be accompanied

by itching, edema of the face and hands, bronchospasm, wheezing, urticaria, and/or anaphylaxis. Air embolus results in respiratory distress, along with cyanosis, signs and symptoms of shock, loss of consciousness, and respiratory arrest. Catheter shear results in sudden shortness of breath, possibly diminished breath sounds, and the same signs and symptoms as with an air embolus. Circulatory overload can cause shortness of breath, JVD, increased blood pressure, and, potentially, crackles and peripheral edema.

### *Points to Ponder*

The paramedic is not serving as a patient advocate. He may believe that performing such skills is his responsibility. Inserting such large IV catheters in the hands of certain patients can cause great pain and additional vascular and nerve problems in the future. It would be proper to discuss the issue with the paramedic. Most new paramedics are very receptive to experienced colleagues. If this doesn't fix the problem, use your chain of command. It is very important that attention is brought to the care being given.

## **Chapter 41: Assisting With Cardiac Monitoring**

### *Assessment in Action*

#### 1. B. Sinus bradycardia

This patient's heart rate is less than 60 beats/min, which means the rhythm is sinus bradycardia. Sinus bradycardia is a rhythm that has consistent P waves, consistent P-R intervals, and a regular heart rate that is less than 60 beats/min.

#### 2. A. Normal sinus rhythm

Normal sinus rhythm is a rhythm with all P waves and P-R intervals identical and a rate of 60 to 100 beats/min.

#### 3. C. Sinus tachycardia

Sinus tachycardia is a rhythm with all P waves and P-R intervals identical and a rate of more than 100 beats/min.

#### 4. A. On the left side of the patient's abdomen, at least 10 cm from the heart

The red lead should be placed on the patient's left side, on the abdomen or left leg, at least 10 cm from the heart. The lead that goes on the patient's left shoulder is the black lead, again at least 10 cm from the heart. Answer C is incorrect because it does not specify the location—the lead cannot go in any location. Answer D refers to the location for the green lead but incorrectly lists the distance as at least 12 cm from the heart; it should be at least 10 cm from the heart.

5. The electrical conduction pathway of the heart contains the following components:

- SA node
- Internodal pathways (anterior, middle, posterior)
- AV node
- Bundle of His
- Right and left bundle branches
- Left anterior and left posterior fascicles
- Purkinje fibers

The SA node is the heart's main pacemaker. It is followed by three internodal pathways: anterior, middle, and posterior. Their main purpose is to transmit the pacing impulse from the SA node to the AV node. The AV node is responsible for slowing conduction from the atria to the ventricles just enough for atrial contraction to occur. The bundle of His starts at the AV node and eventually gives rise to the right and left bundle branches. The bundle of His is the only route of communication between the atria and the ventricles. The left bundle travels through the interventricular septum. The right bundle, which starts at the bundle of His, gives rise to the fibers on the right face of the interventricular septum. The left anterior fascicle leads to the left ventricle. The left posterior fascicle is a fanlike structure leading to the Purkinje cells. These are individual cells that directly innervate the myocardial cells.

#### *Points to Ponder*

The leads should be placed in the following locations:

- V<sub>1</sub>—4th intercostal space, right sternal border
- V<sub>2</sub>—4th intercostal space, left sternal border
- V<sub>3</sub>— Between V<sub>2</sub> and V<sub>4</sub>
- V<sub>4</sub>—5th intercostal space, midclavicular line
- V<sub>5</sub>— Lateral to V<sub>4</sub> at the anterior axillary line
- V<sub>6</sub>— Lateral to V<sub>5</sub> at midaxillary line

When you are faced with a patient who is diaphoretic, wiping the patient's skin thoroughly with a towel and using benzoin can help keep leads attached. It is very important to have a direct skin contact when using a 12-lead ECG.