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# Latest Version: 6.1

## Question: 1

What is the defining characteristic in determining whether a person has had a heat stroke?

- A. Muscle cramping
- B. Altered mental status
- C. Hyperventilation
- D. Cessation of sweating

**Answer: B**

Explanation:

Altered mental status occurs when a person is suffering a heatstroke. By the time heat stroke occurs, the person's core body temperature has risen enough to cause CNS changes.

While cessation of sweating, cramping, and hyperventilation can occur with any heat related injury, it is the change in mental status that defines heat stroke.

## Question: 2

The Intra Aortic Balloon Pump (IABP) is a device that improves coronary artery perfusion and cardiac output while decreasing the workload on the heart. During which phase does the IABP balloon inflate?

- A. Beginning of systole
- B. Beginning of diastole
- C. Just before the end of systole
- D. Just before the end of diastole

**Answer: B**

Explanation:

The balloon improves cardiac output and coronary artery perfusion by counter flow. At the beginning of diastole, as the heart relaxes, the balloon inflates, thus pushing blood back into the coronary arteries. At the very moment systole begins, the balloon deflates, creating negative pressure allowing the heart to work less to pump blood into systemic circulation.

## Question: 3

The Air and Surface Transport Nurses Association (ASTNA) is responsible for all the following, except:

- A. The development of the CFRN and CTRN certification examinations
- B. The development of a multidisciplinary text that addresses the principles and practices of patient transport

- C. The development of patient care and safety transport standards
- D. The development of the Transport Nurse Advanced Trauma Program

**Answer: C**

Explanation:

The ASTNA is a membership association that advocates for nurses involved in patient transport; it is recognized worldwide as a professional organization for nurses practicing in the critical care transport industry.

The Transport Nurse Advanced Trauma Program was an appointed committee within the ASTNA that revised a course focused on advanced trauma care by flight nurses. This course provides knowledge, competencies, and skills for all who provide care in the transport environment. The ASTNA is partnered with the Board for Certified Emergency Nurses to develop both the CFRN and the Certified Transport Nurse certification examinations. The ASTNA is also responsible for the Air and Surface Transport: Principles and Practice text.

The Commission on Accreditation of Medical Transport Systems (CAMTS) develops standards for patient care and safety in the transport environment. Based on these standards, ground and air medical transports that substantially comply with these standards may achieve accreditation.

### Question: 4

What is indicated for a ruptured abdominal aortic aneurysm (AAA)?

- A. Rapid IV fluid bolus
- B. TXA administration
- C. Surgical intervention
- D. Vasopressors

**Answer: C**

Explanation:

Mortality rates for ruptured AAA is over 80%. The transport team must make ensuring the patient receives surgical intervention at an appropriate facility the priority. The transport team should make a coordinated effort to reduce time to the OR. Ruptured abdominal aortic aneurysm should be suspected in patients over age 50 who complain of pain in the abdomen or back and in whom examination reveals a pulsatile abdominal mass.

### Question: 5

A patient who has been diagnosed with pulmonary hypertension (PH) is being transported by medical helicopter for further treatment and management. The patient has already undergone a right heart catheterization procedure. Which of the following diagnostic criteria is used to establish a diagnosis of PH?

- A. A pulmonary arterial diastolic pressure between 4 mm Hg to 12 mm Hg
- B. A mean pulmonary arterial pressure (mPAP) between 21 mm Hg to 24 mm Hg

- C. A mean pulmonary arterial pressure (mPAP) of 25 mm Hg or greater
- D. A pulmonary arterial systolic pressure between 15 mm Hg to 30 mm Hg

**Answer: C**

Explanation:

Pulmonary hypertension (PH), an increase in the blood pressure of the vessels which carry blood from the heart to the lungs, may occur as a result of another pre-existing disease or condition or other insult, or it may be a primary disorder of the pulmonary vessels. PH is diagnosed through the use of catheterization of the right side of the heart, during which direct pressure of the pulmonary arteries and right ventricle is measured. A mean pulmonary arterial pressure (mPAP) of 25 mm Hg or greater is diagnostic for PH. Normal pulmonary arterial systolic pressure is between 15 mm Hg to 30 mm Hg, while normal diastolic pressure ranges from 4 mm Hg to 12 mm Hg. A mPAP between 21 mm Hg to 24 mm Hg is considered by many to be within a borderline range, which currently is of uncertain clinical significance.

PH is categorized into 5 groups (this classification system is used internationally), and includes:

Group 1: caused by narrowing of the pulmonary vessels, adding stress to the right side of the heart, and eventually develops in to right-sided heart failure. May be caused by inherited factors, induced by drugs or toxins, or occur as a result of connective tissue disorders.

Group 2: characterized by involvement of the left ventricle and disease of the valves.

Group 3: characterized by narrowing of the pulmonary arteries as a result of chronic lung disease and hypoxia.

Group 4: characterized by chronic thromboembolism which causes constricting of the pulmonary vessels.

Group 5: may be caused by hematologic, systemic, and metabolic disorders.

## Question: 6

What is the calculated GCS score for an 18-month old infant with a likely traumatic brain injury that displays spontaneous movement and eye-opening, but who cries inconsolably?

- A. 13 - E3, M6, V4
- B. 14 - E5, M5, V4
- C. 15 - E4, M6, V5
- D. 14 - E4, M6, V4

**Answer: D**

Explanation:

The Pediatric Glasgow Coma Scale score can be used to assess and track a patient's mental status and level of consciousness and has been shown to be especially accurate for babies and toddlers who needed acute intervention. It should be performed to establish a baseline after the primary assessment. Common applications include the need to consider intubation/definitive airway management in those with a GCS less than 8. However, the entire clinical picture must be taken into account. Like the standard GCS, the score alone is not sufficient to guide diagnosis or management. Any patient with an abnormal GCS warrants close assessment and monitoring.

### Question: 7

During transport, a 68-year-old man suddenly experiences difficulty talking and right-sided weakness. The patient interview indicates an NIHSS score of 7. You are 15 minutes from your destination, a certified stroke center, and he meets initial criteria for fibrinolytic therapy.

Which of the following best describes the guidelines for combining antiplatelet and fibrinolytic therapy?

- A. Administer heparin
- B. Administer 81 mg of aspirin, chewed
- C. Administer 165 to 325 mg of aspirin, oral
- D. Hold aspirin

**Answer: D**

Explanation:

Use of fibrinolytics in acute ischemic stroke requires strict adherence to recommended guidelines and should be done with informed consent. Adjunctive use of anticoagulants should be avoided for 48 hours if fibrinolytics are to be used.

The primary goal of IV antithrombotic therapy is the restoration of the blood supply to the brain. Ensuring a stable airway, breathing, and circulation is the first step, followed by focused clinical history and neurologic assessment. Intravenous (IV) thrombolytics are indicated within three hours of symptom onset with no contraindications. Treatment with t-PA between 3.5 and 4 hours has been used in select groups. CT of the head should be performed to exclude hemorrhage, and fingerstick glucose should be checked before administration of t-PA.

Early use of t-PA results in better outcomes and is considered a quality measure in stroke care. The use of stroke scales such as the NIHSS helps to quantify the degree of neurologic deficit and change in clinical status.

### Question: 8

You are caring for a patient that goes into pulseless ventricular tachycardia while en route to the hospital. What is the first step in treating this patient?

- A. Administer epinephrine
- B. Administer lidocaine
- C. Begin pacing the patient
- D. Defibrillation

**Answer: D**

Explanation:

Upon recognition of pulseless V-tach, the CFRN/CTRN should immediately defibrillate. Care should be taken if this occurs while flying to avoid touching the rails of the stretcher and notification is given to the pilot prior to shock delivery. ACLS protocols then call for the giving of epinephrine if the patient remains

pulseless, while chest compressions are being performed. Lidocaine is given if VT is refractory to amiodarone. Pacing the patient is done when a patient is having symptomatic bradycardia.

### Question: 9

What causes the S1 heart sound?

- A. Opening of bicuspid and tricuspid valves
- B. Closure of atrial and pulmonic valves
- C. Opening of atrial and pulmonic valves
- D. Closure of the bicuspid and tricuspid valves

**Answer: D**

Explanation:

First, we can eliminate two answer choices if we know that heart sounds S1 and S2 are caused by closing of valves, not by the opening of valves. Now, we need to determine if the correct answer is the atrioventricular valves (bicuspid and tricuspid) or the aortic and pulmonic. The S1 sound is heard at the beginning of systole, when the pressure in the ventricles becomes greater than the pressure in the atria, which causes the bicuspid and tricuspid valves to close. Both atrioventricular valves close at the same time.

### Question: 10

Which of the following interventions would improve the effectiveness of mask ventilation?

- A. Apply the mask loosely to the patient's face
- B. Extend the patient's neck so the airway is open
- C. Reposition the patient's head into a "sniffing" orientation
- D. Pressure of PPV can be increased to a maximum of 20 cm H2O if necessary

**Answer: C**

Explanation:

MR. SOPA describes interventions to improve the effectiveness of max ventilation:

M: Mask is tightly applied to the face

R: Reposition the head into a "sniffing" orientation

S: Suction the nares and the pharynx

O: Open the mouth

P: Pressure of PPV can be increased to a maximum of 40 cm H2O

A: Alternate airway plan and consideration

### Question: 11

Which of the following statements regarding the use of renal-dose dopamine is most accurate?

- A. Renal-dose dopamine is defined as doses under 5 micrograms/kg/minute
- B. The use of renal-dose dopamine in critical care medicine is considered standard of care
- C. The use of renal-dose dopamine has been found to cause harm
- D. Renal-dose dopamine affords renal protection in patients experiencing shock

**Answer: C**

Explanation:

The use of "renal-dose" dopamine, while considered to be the standard of care for many years in critical care medicine, is no longer routinely used or recommended in patients experiencing shock. Dopamine doses under 3 micrograms/kg/minute defined renal-dosing, and were thought to provide renal protection.

Clinical trials have not supported this idea and have, in fact, demonstrated possible harm from the use of renal-dose dopamine due to inadequacy of vasopressor support.

### Question: 12

You are treating a patient who is experiencing chest pain, hypotension, and nausea

a. You placed the patient on a 12-lead EKG and you find ST segment elevation in leads II, III, and AVF. Which coronary artery supplies blood flow to the inferior wall of the heart?

- A. Left Coronary Artery
- B. Right Coronary Artery
- C. Left Anterior Descending Artery
- D. Left Circumflex Artery

**Answer: B**

Explanation:

The inferior wall of the heart is supplied by the Right Coronary Artery. The Left Coronary Artery branches into both the Left Anterior Descending and the Left Circumflex arteries, which supply the Anterior, Lateral, and Posterior walls of the heart.

### Question: 13

You are a CFRN/CTRN called to the scene of a pediatric patient that was struck by a vehicle. Upon arrival to the scene, the patient is found lying supine. The patient is unresponsive to verbal stimulation. The patient is displaying decorticate posturing and has Cheyne-Stokes respirations. You and your partner determine that the child needs an advanced airway placed. You decide that you will use an uncuffed ET tube. The child's mother is on scene and tells you that her child is four years old.

What is the correct ETT size for the patient?

- A. 5.0
- B. 6.0
- C. 3.0
- D. 4.0

**Answer: A**

Explanation:

Pediatric ETT sizes can be determined by the formula  $(\text{Age}/4)+4$ . Since the child is reportedly four years old, the formula is  $(4/4)+4$ , which equals 5.0. This formula works for uncuffed ETT. A variation of the formula is  $(16+\text{Age})/4$ . Whichever formula is easier for you to use, commit that one to memory.

### Question: 14

You are the CTRN/CFRN transporting a 23-year-old man who has suffered a gunshot wound to the right lower extremity and is bleeding from his femoral artery. His blood pressure is 75/30, and he is pale and short of breath. Which intervention should you take first to address the patient's hemorrhagic shock?

- A. Insert an IV and begin bolusing the patient with warmed crystalloids
- B. Apply a tourniquet
- C. Begin massive transfusion protocol
- D. Apply firm pressure to the site of the bleed

**Answer: B**

Explanation:

The first step you must take is to control the patient's bleeding. A penetrating trauma that affects the femoral artery will not be stopped by pressure at the site of the injury alone. Pressure applied to the femoral artery by a tourniquet is necessary to control the bleeding. Once the bleeding is controlled, beginning the massive transfusion protocol and bolusing the patient with warmed crystalloids are appropriate interventions.

### Question: 15

When concurrent with high-quality CPR, which of the following is critical to survival when sudden cardiac arrest is caused by ventricular fibrillation or pulseless ventricular tachycardia?

- A. Epinephrine administration
- B. Targeted temperature management
- C. Advanced airway
- D. Early defibrillation

**Answer: D**

Explanation:

Early defibrillation with concurrent high-quality CPR is critical to survival when sudden cardiac arrest is caused by ventricular fibrillation or pulseless ventricular tachycardia. Administration of epinephrine with concurrent high-quality CPR improves survival, particularly in patients with non-shockable rhythms. Reducing interruption of compressions is a key component of high-quality CPR.

Advanced airways when necessary should take no longer than 10 seconds to insert. Prompt initiation of targeted temperature management (TTM) is necessary for all patients who do not follow commands after return of spontaneous circulation to ensure optimal functional and neurological outcome. TTM between 32°C and 36°C for at least 24 hours is recommended for all cardiac rhythms in both out-of-hospital and in-hospital cardiac arrest.

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