



EMS Magazine's CE Review offers affordable continuing education credits. Simply read the CE article beginning on page 74, then answer the test questions below, marking your answers in the answer strip on the opposite page. The test is worth 1.5 hours of credit approved by the Continuing Education Coordinating Board for EMS (CECBEMS). Upon receiving a grade of 80% or better, participants will be issued a CE certificate that attests to a passing score. The cost per test is \$5, or \$4 each when you purchase CEU vouchers in advance. You must purchase a minimum of five vouchers in order to qualify for the discount. You can include a completed test when purchasing vouchers.

Check the correct answers and mail this entire page, along with your payment of \$5, or one CE voucher, and a self-addressed, stamped envelope, to: EMS Magazine, CE Review, P.O. Box 7248, Mission Hills, CA 91346-7248. Please allow eight weeks for test processing. Photocopies are acceptable. The test must be postmarked by March 3, 2008. Tests postmarked after the expiration date will be returned. Payment can be made by cash, check or credit card. There will be a charge for returned checks. Please complete the appropriate method of payment information on the test. Questions? Call Maribel Lopez at 800/547-7377, ext. 1107.

## CAPNOGRAPHY

The following questions are based on *Beyond the Basics: Capnography*, beginning on page 74.

**1. Which of the following sentences is NOT true?**

- A. The blood exiting the pulmonary capillaries has a high partial pressure of O<sub>2</sub> and low partial pressure of CO<sub>2</sub>
- B. The cells have a lower partial pressure of O<sub>2</sub> and higher partial pressure of CO<sub>2</sub>
- C. The venous blood has lower levels of CO<sub>2</sub> as a result of normal cellular metabolism
- D. As a general rule, gas moves from a high to a low concentration

**2. During respiration, oxygen-enriched air travels through the respiratory tract until it reaches the \_\_\_\_\_.**

- A. Arterioles
- B. Alveoli
- C. Pulmonary capillaries
- D. Veins

**3. The byproducts of aerobic metabolism are \_\_\_\_\_.**

- A. Water and carbon dioxide
- B. Water and oxygen
- C. Oxygen and carbon dioxide
- D. Water and bicarbonate

**4. Of the various methods by which carbon dioxide is transported in the blood, 70% is transported \_\_\_\_\_.**

- A. Dissolved in plasma
- B. As bicarbonate
- C. As carbaminohemoglobin
- D. As sodium

**5. Capnography is used to measure \_\_\_\_\_.**

- A. The amount of gas exchange between the alveoli and capillaries
- B. Oxygen concentration in the alveoli
- C. Oxygen concentration in the capillaries during exhalation
- D. Exhaled carbon dioxide levels

**6. When blood reaches the pulmonary circulation, bicarbonate re-enters the red blood cells and combines with \_\_\_\_\_ to form carbonic acid.**

- A. Oxygen
- B. Gas
- C. Hydrogen
- D. Carbon dioxide

**7. An exhaled breath containing more than 45 mmHg of carbon dioxide is typically an indication of \_\_\_\_\_.**

- A. Hypoventilation
- B. Hyperventilation
- C. Shock
- D. Poor pulmonary perfusion

**8. Point C on a capnography waveform represents \_\_\_\_\_.**

- A. The end-tidal point of CO<sub>2</sub> monitoring
- B. The end of an exhaled breath
- C. Emptying of the alveoli
- D. Inspiration

**9. The highest concentration of carbon dioxide is measured on the capnography waveform \_\_\_\_\_.**

- A. Between points A and B
- B. Between points B and C
- C. At point C
- D. At point D

**10. When Phase II on the capnography waveform takes on an appearance similar to a shark fin, it may be a result of \_\_\_\_\_.**

- A. Hypoventilation
- B. Hyperventilation
- C. A partial lower airway obstruction
- D. Apnea

**11. If a waveform decreases in size and takes on the shape of a tombstone, it generally indicates \_\_\_\_\_.**

- A. An unplugged detection device
- B. An esophageal intubation
- C. Presence of emphysema
- D. A plugged endotracheal tube

**12. One 2005 study of intubation by paramedics determined that without the use of capnography, EMS providers failed to recognize \_\_\_\_\_ of misplaced endotracheal tubes.**

- A. 23%
- B. 35%
- C. 15%
- D. 75%



This continuing education activity is approved by *EMS Magazine*, an organization accredited by the Continuing Education Coordinating Board for Emergency Medical Services (CECBEMS), for 1.5 CEUs.

Answers to *Capnography*, CE Review, *EMS Magazine*, January 2008

- |                                                                                                                |                                                                                                                |                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 5. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 9. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/>  |
| 2. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 6. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 10. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> |
| 3. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 7. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 11. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> |
| 4. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 8. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> | 12. a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> |

Date Test Completed (required) \_\_\_\_\_

**TEST EVALUATION**

We value your opinion. We would appreciate your comments on the CE test you have just completed.

- |                                                                   | Yes                      | Somewhat                 | No                       |
|-------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| 1. Did the authors meet the article's objectives?                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Were the graphics presented with the article helpful?          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Did the article meet your learning needs?                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Was the article well written and organized?                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. What topics would you like to see covered in the future? _____ |                          |                          |                          |

**You must provide your state of license and license number, level/type of license and the date the test was completed in order for your test to be processed. North Carolina providers: Please list DOB instead of license number.**

A self-addressed, stamped envelope must accompany your submission.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Agency \_\_\_\_\_

Telephone \_\_\_\_\_

E-mail \_\_\_\_\_

State of License and License # \_\_\_\_\_

Level/Type of License \_\_\_\_\_ Exp. Date \_\_\_\_\_

National Registry # \_\_\_\_\_

National Registry Reregistration Date \_\_\_\_\_

**Method of Payment**

Cash (Please be advised we are not liable for cash payments by mail.)

VISA  MasterCard  AmEx Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Check (Make payable to *EMS Magazine*) Check Number \_\_\_\_\_

Signature \_\_\_\_\_

Number of Tests Submitted \_\_\_ x \$5 = TOTAL DUE \_\_\_\_\_  \_\_\_ prepaid voucher(s) enclosed

**CE Voucher Order Form**

A minimum of five vouchers must be ordered at any one time.

Send me \_\_\_ vouchers x \$4 each = TOTAL DUE \_\_\_\_\_

Bulk discounts are available. Call 800/547-7377, ext. 1107.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Agency \_\_\_\_\_

Telephone \_\_\_\_\_

E-mail \_\_\_\_\_

**Method of Payment for Vouchers**

- AmEx  VISA  MasterCard
- Cash  Check (Make payable to *EMS Magazine*)

Exp. Date \_\_\_\_\_

Card Number \_\_\_\_\_

Check Number \_\_\_\_\_

Signature \_\_\_\_\_