

# Emergency Medical Technician

60 Questions

1. Which of the following is your primary goal during airway management?

- a. Ensure clear, unobstructed breathing.
- b. Ensure that CPR is effective.
- c. Provide a means of drug administration.
- \*d. Provide optimal patient ventilation.

2. You are on scene managing a 14-year-old asthmatic male. He is breathing 28 breaths/min and has retractions. Which of the following is your primary focus?

- a. Ensure adequate perfusion.
- \*b. Ensure optimal ventilation.
- c. Get ready for CPR.
- d. Perform a secondary survey.

3. Which of the following is a structure of the upper airway?

- a. Alveoli
- b. Bronchioles
- c. Carina
- \*d. Pharynx

4. Although the palatine tonsils are part of the lymphatic system, they affect the airway because:

- a. They cause asthma to develop in children.
- b. They cause the trachea to close when we swallow.
- c. They secrete saliva coating the cilia.
- \*d. When inflamed, they can impair breathing causing respiratory distress.

5. The narrowest part of the adult upper airway is known as the:

- a. Epiglottis
- \*b. Glottic opening
- c. Nasopharynx
- d. Vallecula

6. As you and your partner are assisting ventilations with a bag-mask device, you notice significant distention of the stomach. Which of the following maneuvers will help prevent further dilation?

- a. Gentle compression of the lateral neck
- \*b. Gentle pressure below the thyroid cartilage
- c. Gentle pressure over nares
- d. Gentle pressure superior to the thyroid cartilage

7. Compared to the left mainstem bronchus, the right mainstem bronchus is:

- \*a. At a more gradual angle
- b. Made of thicker membrane
- c. More angled from the trachea
- d. More narrow

8. Which of the following is the function of the cilia?

- a. Cool exhaled air
- \*b. Filter inhaled air
- c. Help O<sub>2</sub>/CO<sub>2</sub> exchange
- d. Warm inhaled air

9. Which of the following respiratory structures is the location of oxygen and carbon dioxide exchange?

- \*a. Alveoli
- b. Carina
- c. Hilum
- d. Vallecula

10. A 15-year-old male patient is eating chips while laughing. He begins to cough forcefully. Which of the following reflexes is preventing aspiration of the chips into the lungs?

- \*a. Gag reflex
- b. Korsacoff's reflex
- c. Retch reflex
- d. Vagus nerve reflex

11. A patient has overdosed on narcotic medications. Upon your arrival, the patient has no obvious gag reflex. Which of the following conditions may this patient develop because of his lack of gag reflex?

- a. Alkalosis
- \*b. Aspiration pneumonia
- c. Hypertension
- d. Hypocarbica

12. A chemical substance inside the alveoli that acts to lubricate the alveoli, decrease surface tension inside the alveoli, and facilitate expansion of the alveoli is known as:

- a. Atelectasis enzyme
- b. Hilum expansion chemical
- c. Surface enzyme
- \*d. Surfactant

13. Pulmonary surfactant:

- a. Increases airway pressures within the lungs
- b. Increases the attractive forces between the water molecules in the lungs
- c. Lowers the recoil in the elastic fibers in the alveolar walls
- \*d. Lowers the surface tension, preventing alveolar collapse

14. Placing an infant or young child in a supine position may cause flexion and occlusion of the airway. Which of the following may be the cause for this occlusion?

- a. The anterior location of the larynx and pharynx
- b. The extreme flexibility of the infant's airway
- \*c. The larger size of the child's head relative to his body
- d. The larger size of the child's tongue relative to his body

15. The normal movement of the diaphragm during inspiration:

- a. Causes passive inhalation
- b. Causes the diaphragm to move up
- \*c. Flattens the diaphragm
- d. Increases the side-to-side dimensions of the chest

16. Which of the following is an anatomic difference in a child's airway as compared to that of an adult?

- a. A child's tongue is small in relationship to the size of the mouth.
- b. The distance from the vocal cords to the carina gets smaller with age.
- \*c. The epiglottis is U-shaped in a child.
- d. The vocal cords slope from front to back in infants.

17. Which of the following terms best describes the process of breathing?

- a. Diffusion
- b. Insufflation
- c. Respiration
- \*d. Ventilation

18. A patient takes in a deep breath. The oxygen and carbon dioxide molecules transfer across the capillary in the alveoli. Which of the following terms best describes this type of respiration?

- \*a. External respiration
- b. External ventilation
- c. Internal respiration
- d. Pulmonary diffusion

19. Air normally moves into the lungs from the:

- a. Higher pressure within the lungs during inspiration
- b. Increased intrathoracic pressure during inspiration
- c. Positive pressure forcing air into the lungs
- \*d. Pressure gradient created when the lungs expand

20. Diffusion is:

- a. A gaseous substance dissolving in a liquid substance
- b. The active transport of gas with energy expended
- \*c. The movement of a gas from a higher pressure to a lower pressure across a semipermeable membrane
- d. The movement of a gas from a lower pressure to a higher pressure across a semipermeable membrane

21. Which of the following is a normal PaO<sub>2</sub>?

- a. 70 mm Hg
- \*b. 90 mm Hg
- c. 110 mm Hg
- d. 140 mm Hg

22. The term partial pressure of gases refers to:

- a. The concentration of a gas in a mixture of other gases
- b. The concentration of a single gas unmixed with other gases
- \*c. The pressure a gas exerts in a mixture of other gases
- d. The pressure of a single gas unmixed with other gases

23. At sea level, the pressure of all gases is 760 mm Hg, or 760 Torr. If the concentration of oxygen in the atmosphere at sea level is 21%, the partial pressure of oxygen at sea level is approximately:

- a. 150 mm Hg
- \*b. 160 mm Hg
- c. 180 mm Hg
- d. 210 mm Hg

24. The normal partial pressure of oxygen in arterial blood is:

- \*a. 80 to 100 Torr
- b. 150 to 160 Torr
- c. 180 to 200 Torr
- d. 210 to 220 Torr

25. One of the most prevalent atmospheric gasses is:

- a. Helium
- b. Nitric oxide
- \*c. Nitrogen
- d. Water vapor

26. Measuring the oxygen levels in a patient's blood can give the paramedic valuable information. A pulse oximeter is an external device that measures:

- a. The partial pressure of carbon dioxide in the patient's arterial blood
- b. The partial pressure of oxygen in the patient's arterial blood
- c. The percentage of free oxygen in the patient's arterial blood
- \*d. The percentage of oxygen bound to hemoglobin in the patient's blood

27. A normal pulse oximetry reading is at or above:

- a. 90%
- b. 93%
- c. 95%
- \*d. 98%

28. You are caring for a patient in the early stages of shock for which the body is compensating adequately. Which of the following comments regarding pulse oximetry readings is appropriate?

- a. The reading is completely accurate and reflects oxygen saturation.
- \*b. The reading is inaccurate because of the poor perfusion to the periphery.
- c. The reading is low and calls for aggressive airway management.
- d. The reading suggests adequate breathing and oxygenation.

29. Most of the oxygen in blood is carried:

- a. As carboxyhemoglobin
- \*b. Attached to hemoglobin
- c. Attached to leukocytes
- d. Dissolved in plasma

30. The most important factor in determining the extent to which oxygen combines with hemoglobin is the:

- a. Number of oxygen receptor sites on the hemoglobin
- \*b. Partial pressure of oxygen in the blood plasma
- c. Partial pressure of oxygen in the lungs
- d. Relative number of red blood cells in the plasma

31. Which of the following is a normal PaCO<sub>2</sub>?

- a. 20 mm Hg
- \*b. 40 mm Hg
- c. 50 mm Hg
- d. 60 mm Hg

32. Carbon dioxide is transported to the lungs in blood in the form of:

- \*a. Bicarbonate ions
- b. Carbonic acid
- c. CO<sub>2</sub> active pump
- d. CO<sub>2</sub> gas bubble

33. The transfer of oxygen and carbon dioxide between the capillary red blood cells and the tissue cells is called:

- a. External respiration
- \*b. Internal respiration
- c. Internal ventilation
- d. Pulmonary ventilation

34. Hypercarbia is best described as:

- a. Decreased carbon dioxide levels
- b. Decreased oxygen levels
- \*c. Increased carbon dioxide levels
- d. Increased oxygen levels

35. Which of the following is likely to decrease carbon dioxide production?

- a. Anaerobic metabolism
- b. Exercise
- c. Ketoacidosis
- \*d. Resting quietly

36. Hyperventilation leads to:

- a. Dilated cerebral vessels
- b. Hypercarbia
- c. Improved cerebral perfusion
- \*d. Low carbon dioxide levels

37. The greatest rate of airflow that can be achieved during forced expiration beginning with the lungs fully inflated best describes:

- \*a. Peak expiratory flow
- b. Peak expiratory reserve
- c. Peak inspiratory volume
- d. Peak residual volume

38. For which of the following conditions is peak expiratory flow decreased?

- \*a. Asthma
- b. Emphysema
- c. Profound hypovolemia
- d. Pulmonary embolism

39. A patient is being evaluated, and the pulmonologist states that the minute volume is decreased. Which of the following would also be decreased?

- a. Alveolar air volume
- b.  $FiO_2$
- c. Peak expiratory flow
- \*d. Tidal volume

40. Which of the following best describes respiration?

- \*a. Involuntary with some voluntary control
- b. Totally involuntary
- c. Totally voluntary
- d. Voluntary with some automatic control

41. A patient suffered severe head trauma and is not spontaneously breathing. Which location in the brain has sustained injury and is responsible for respiration?

- \*a. Brain stem
- b. Cerebral cortex
- c. Diaphragm
- d. Hippocampus

42. A patient has suffered a cervical spine fracture. He is not breathing spontaneously. Which of the following nerves is experiencing the damage from the cord injury?

- a. Apneustic nerves
- b. Diaphragmatic nerves
- \*c. Phrenic nerves
- d. Pneumotaxic nerves

43. Scalene and sternocleidomastoid muscles are used:

- \*a. As accessory muscles during labored breathing
- b. As voluntary muscles if a patient chooses to take a deep breath
- c. During mouth breathing
- d. During normal quiet breathing



44. Physiologic dead space is:

- a. Composed of the nonfunctional alveoli
- b. Created by the upper respiratory tract and nonrespiratory bronchioles
- \*c. Increased in patients with respiratory diseases such as emphysema
- d. Normally 10 times the volume of anatomic dead space

45. Tidal volume is the amount of air:

- a. Always present in the alveoli
- \*b. Inhaled or exhaled during a normal breath
- c. Left in the lungs after a forceful exhalation
- d. That one can inhale after a maximal inhalation

46. Minute volume is the amount of air:

- a. Available for gas exchange in every minute
- b. In the dead space moved in and out of the respiratory tract each minute
- \*c. In the tidal volume multiplied by the respiratory rate
- d. That can be inhaled after a maximal inhalation

47. A patient with a tidal volume of 500 mL, a dead space of 100 mL, and a respiratory rate of 10 breaths/min has a minute alveolar ventilation of:

- a. 3 L/min
- \*b. 4 L/min
- c. 5 L/min
- d. 6 L/min

48. The pneumotaxic center is located in the:

- a. Cerebellum
- b. Hypothalamus
- c. Medulla oblongata
- \*d. Pons

49. The major determinant(s) in controlling respiration is (are) the:

- a. Impulses generated within the lungs
- b. Oxygen content in the blood
- \*c. Partial pressure of carbon dioxide
- d. pH of capillary blood

50. Chemoreceptors are located in the:

- \*a. Arch of the aorta
- b. Blood vessels in the extremities
- c. Cerebrum
- d. Spinal cord

51. A patient with chronic bronchitis is likely to rely on what mechanism to stimulate respiratory drive?

- a. Changes in pH
- b. Elevated carbon dioxide levels
- \*c. Hypoxia
- d. Increased bicarbonate ions

52. Hypoxemia is defined as

- \*a. Inadequate blood oxygen levels
- b. Inadequate hemoglobin levels
- c. Inadequate tissue oxygen levels
- d. Inadequate tissue perfusion

53. Hypoxia is defined as:

- a. Inadequate blood oxygen levels
- b. Inadequate hemoglobin levels
- \*c. Inadequate tissue oxygen levels
- d. Inadequate tissue perfusion

54. Which of the following is the most concerning?

- \*a. A 4-month-old female patient with a respiratory rate of 18 breaths/min
- b. A 6-year-old male patient with a respiratory rate of 30 breaths/min
- c. A 16-year-old female patient with asthma who has a respiratory rate of 24 breaths/min after a 4-mile run
- d. A 75-year-old male patient with a history of COPD and a respiratory rate of 28 breaths/min

55. A patient states he is having difficulty in breathing. Which of the following terms best describes this condition?

- a. Apnea
- \*b. Dyspnea
- c. Hypercarbia
- d. Hypoxia

56. The ease with which the lungs expand during inspiration is known as:

- a. Atmospheric diffusion
- \*b. Compliance
- c. Inspiratory pressure gradient
- d. Pulmonary pressure

57. A hiccup results from stimulation of the:

- \*a. Diaphragm
- b. Intercostal muscles
- c. Lungs
- d. Nasal passages

58. A respiratory pattern characterized by an irregular pattern, rate, and volume, with intermittent periods of apnea is:

- a. Agonal
- \*b. Biot's
- c. Central neurogenic hyperventilation
- d. Cheyne-Stokes

59. A respiratory pattern characterized by deep, rapid respirations is:

- a. Agonal
- b. Biot's
- \*c. Central neurogenic hyperventilation
- d. Cheyne-Stokes

60. Which of the following is used as a portable cylinder for the on-scene administration of oxygen?

- \*a. E cylinder
- b. K cylinder
- c. L cylinder
- d. M cylinder