takece.com
Continuing Education Simplified!

Course Title: Mechanical Ventilation in Respiratory Therapy

Topic: Mechanical Ventilation in the Trauma Patient

1. The trauma and the associated aggressive resuscitation can lead to which of the following?
(A): bleeding
(B): edema
(C): inflammation of the lungs
(D): all of the above

2. The goal of the ventilation is to preserve the lung as well as the brain and other organs that are injured.
(A): True
(B): False

3. The primary goal of the trauma patient is to avoid _____ and secondary tissue injury.
(A): phlebitis
(B): hypoxia
(C): fever
(D): hepatitis

4. _____ is the most used form of ventilation in the operating room.
(A): Pressure Support Ventilation (PSV)
(B): Synchronized Intermittent Mandatory Ventilation (SIMV)
(C): Volume-controlled ventilation (VCV)
(D): none of the above

5. Which of the following is set by the operator in Volume-controlled ventilation (VCV)?
(A): tidal volume (Vt)
(B): respiratory rate
(C): FiO2
(D): all of the above

6. _____ is useful for the patient that has suffered a blunt trauma, with pulmonary contusions and severe atelectasis.
(A): High-frequency oscillation ventilation (HFOV)
(B): Noninvasive positive-pressure ventilation (NIPPV)
(C): Airway pressure release ventilation (APRV)
(D): none of the above

7. High-frequency oscillation ventilation (HFOV) is useful for patients with which of the following condition?
(A): severe pulmonary contusion
(B): ALI/ARDS
(C): smoke inhalation injury
(D): all of the above

8. Which of the following is not recommended for patients with brain injury, intoxication, or facial trauma?
(A): Pressure-controlled ventilation (PCV)
(B): Noninvasive positive-pressure ventilation (NIPPV)
(C): Airway pressure release ventilation (APRV)
(D): none of the above

9. Chest trauma, and the subsequent complications of chest injury, is significantly prevalent and the second most common cause of mortality in trauma.
(A): True
(B): False

10. Injury sustained to the thorax can cause enormous damage to which of the following?
(A): lungs

(B): heart
(C): major vasculature
(D): all of the above

11. Skeletal trauma most commonly involves _____.
(A): cardiac arrest
(B): spinal cord injuries
(C): rib fractures
(D): paralysis

12. Massive thoracic trauma is often accompanied by significant abdominal trauma.
(A): True
(B): False

13. _____ inhibits the lungs' ability to expand and contract.
(A): High fever
(B): Diaphragmatic injury
(C): Inflammation
(D): Cervical spine fracture

14. The most common cause of a _____ is the rupture of intercostal vessels.
(A): pulmonary contusion
(B): hemothorax
(C): COPD
(D): tuberculosis

15. Bronchopulmonary fistula is a communication between proximal and distal airways and the esophagus.
(A): True
(B): False

16. Initial ventilator settings in chest trauma are based on a _____.
(A): patient's blood pressure reading
(B): patient's heart rate
(C): lung-protective strategy
(D): none of the above

17. During ventilator settings in chest trauma the Vt should be set between _____ mL/kg of ideal body weight with the plateau pressure < = 30 cm H20.
(A): 4 and 8
(B): 9 to 11
(C): 12 to 15
(D): 20 to 35

18. Which of the following are initial ventilator settings in the chest trauma patient?
(A): Tidal volumes between 4 and 8 mL/kg of ideal body weight
(B): FiO2 = 1.0, titrated to arterial oxygenation and avoiding PEEP
(C): Rate 15–25 breaths per minute
(D): all of the above

19. The location of the injury helps to determine the organs involved during trauma.
(A): True
(B): False

20. The pain from an abdominal trauma can lead to which of the following?
(A): poor shallow respirations
(B): increased respiratory rate
(C): decreased ability to clear secretions.
(D): all of the above

21. Intra-abdominal pressures exceeding _____ mmHg can result in poor circulation and tissue perfusion as well as decreased cardiac output.
(A): 1-5

(B): 6-9
(C): 10-15
(D): 20-25

22. Which of the following is a **cause of primary brain injury?**
(A): Disruption of vascular structure
(B): Compression of neuronal and glial tissue
(C): Axonal injury
(D): all of the above

23. Low PEEP can lead to elevated intrathoracic pressure, which results in decreased cerebral venous drainage and therefore poor cerebral perfusion.
(A): True
(B): False

24. During brain injury and acute lung injury oxygenation should be monitored with a continuous pulse oximeter and the PaO2 should be > _____ mmHg.
(A): 10
(B): 35
(C): 40
(D): 60

25. Maintenance of an adequate oxygenation is critical to ensure an adequate cerebral perfusion pressure (CPP).
(A): True
(B): False

26. A _____ scan is recommended on arrival to determine a baseline in orthopedic trauma.
(A): MRI
(B): Sonography
(C): chest X-ray or computed tomography (CT)
(D): Nuclear medicine

27. _____ is a result of the micro-embolism of fat and bone marrow from a patient's long bones.
(A): Osteosarcoma
(B): Cardiac arrest
(C): Fat embolism syndrome (FES)
(D): Leukemia

28. Smoke inhalation is associated with increased mortality in a _____ patient.
(A): cancer
(B): burn
(C): diabetic
(D): cardiac

29. Carbon monoxide is a byproduct of combustion.
(A): True
(B): False

30. Which of the following is the treatment of carbon monoxide poisoning?
(A): chemotherapy
(B): radiation therapy
(C): oxygen therapy
(D): none of the above

31. Which of the following is a classic symptom of impending airway obstruction?
(A): Stridor
(B): Hoarseness
(C): Dysphagia
(D): all of the above

Topic: Ventilation Strategies in Obese Patients

32. Which of the following is a frequently mentioned diagnosis linking respiratory failure and obesity?
(A): high cholesterol
(B): obesity hypoventilation syndrome (OHS)
(C): fatty liver disorder
(D): gout

33. The obesity hypoventilation syndrome (OHS) can result from which of the following?
(A): Reduction of vital capacity and functional residual capacity due to the mass of abdominal and subcutaneous chest fat
(B): Upper airway narrowing and collapse during sleep-obstructive sleep apnea (OSA)
(C): Accumulation of fat deposits in the respiratory system with increased lower airways resistance
(D): all of the above

34. Accumulation of serum bicarbonate in obese patients can cause a reduction of ventilatory response to _____.
(A): carbon dioxide (CO2)
(B): oxygen
(C): pain killers
(D): antibiotics

35. The misdiagnosis of obstructive pulmonary disease without adequate lung function examination incorrectly directs treatment to the application of bronchodilators instead of adequate respiratory support.
(A): True
(B): False

36. Which of the following phenotype is characterized by a lack of CO2 washout capacity after obstructive apnea episodes?
(A): Isolated OHS
(B): Moderate OHS
(C): Severe OSA
(D): none of the above

37. The noninvasive ventilation (NIV) is the method of choice for acute or acute-on-chronic respiratory failure because it significantly reduces patient morbidity and mortality and reduces the risk of reintubation.
(A): True
(B): False

38. _____ is preferred in acute settings and very obese patients because of high pressures and mouth breathing.
(A): Nasal canula
(B): Face mask (oronasal/full-face mask)
(C): NG Tube
(D): none of the above

39. Which of the following is the respiratory backup rate to prevent central apnea and hypoventilation during sleep?
(A): 1-3
(B): 4-7
(C): 8-10
(D): 12–14

40. COPD is a serious disease with an increasing prevalence, accompanied by a substantial risk of respiratory failure.
(A): True
(B): False

41. Which of the following is an *Indication for NIV in acute hypercapnic respiratory failure in COPD*?
(A): PaCO2 ≥ 45 mm Hg
(B): Respiratory acidosis with 7.1 < pH < 7.35
(C): Severe breathlessness, tachypnea (≥23 breaths/min)
(D): all of the above

Topic: Mechanical Ventilation in Neurocritical Patients

42. About _____% of neurological critically ill patients require mechanical ventilation (MV) of which 20–25% will develop acute respiratory distress syndrome (ARDS).
(A): 20
(B): 50
(C): 75
(D): 89

43. Which of the following is associated with lung injury and amplify acute brain injury (ABI)?
(A): Hypoxemia
(B): Hypercapnia
(C): Phlebitis
(D): Both A and B

44. In patients with ABI, it is fundamental to guarantee an optimal oxygenation to avoid secondary brain injury.
(A): True
(B): False

45. It is recommended to target “normoxia” with a partial arterial pressure of oxygen (PaO2) between _____ mmHg and or a peripheral oxygen saturation (SpO2) of ≥95% in patients with or without intracranial hypertension.
(A): 10-20
(B): 30-45
(C): 50-65
(D): 80-120

46. Ventilation with Vt between _____ ml/kg of predicted body weight is considered a standard of ventilatory treatment in patients with ARDS and its application in general in patients under invasive ventilatory support.
(A): 6 and 8
(B): 15 and 17
(C): 18 and 20
(D): 21 and 23

Topic: Mechanical Ventilation for Patients with COPD

47. COPD is characterized by chronic inflammation of the airways and _____.
(A): thyroid glands
(B): kidneys
(C): lung parenchyma
(D): cardiac muscles

48. The most important physiologic abnormality of COPD is worsening of expiratory airflow limitation due to increased airway resistance and decreased elastic recoil.
(A): True
(B): False

49. The non-invasive ventilation (NIV) is contraindicated in which of the following situations?
(A): respiratory or cardiac arrest
(B): hemodynamic instability or inability to use mask
(C): excessive secretion or high risk for aspiration
(D): all of the above

50. Patient tolerance to NIV is a critical factor determining its success in avoiding _____.
(A): nasogastric tube
(B): endotracheal intubation
(C): angiography
(D): none of the above

51. Long term oxygen therapy (LTOT), is used mainly in COPD patients with _____.
(A): diabetes

(B): hemothorax
(C): chronic hypoxemia
(D): influenza

Topic: Weaning from Mechanical Ventilation
52. Weaning from mechanical ventilation (MV) is the process by which a patient is liberated from a ventilator.
(A): True
(B): False

53. The first consideration when weaning a patient from MV is whether the disease that necessitated MV is controlled and in _____.
(A): extubation process
(B): recovery phase
(C): terminal phase
(D): therapeutic index

54. Which of the following are other considerations when weaning a patient from mechanical ventilation?
(A): respiratory function
(B): cardiovascular function
(C): neurological status
(D): all of the above

55. A patient can be considered ready for extubation if they are disoriented and uncooperative.
(A): True
(B): False

56. The best studied predictor is the Rapid Shallow Breathing Index (RSBI), which is calculated by dividing the tidal volume (in liters) by the _____.
(A): tension-time index (TTI)
(B): CROP index
(C): respiratory rate (Vt/f)
(D): Weaning Index (WI)

Topic: How Medical Conditions Affect the Weaning of Mechanical Ventilation
57. In which of the following patients, the weaning process is more difficult, prolonged and has higher failure rates than general populations?
(A): COPD
(B): Diabetic
(C): Neonate
(D): Cardiac

58. Negative intrathoracic pressures cause increased left ventricular (LV) preload which increases LV afterload and reduces left ventricular ejection fraction.
(A): True
(B): False

59. Weaning from MV requires adequate _____ to overcome the impedance of the respiratory system and maintain adequate alveolar ventilation to eliminate carbon dioxide and ensure a metabolic balance.
(A): blood circulation
(B): neuromuscular activity
(C): calcium deposit
(D): liver function

60. Obese patients, with a body mass index (BMI) > ____, have specific problems during MV.
(A): 5
(B): 10
(C): 20
(D): 30

61. Prolonged weaning concerns about _____% of critically ill intubated patients and is associated with a high mortality.
(A): 10

(B): 40
(C): 60
(D): 80

Topic: Palliative Withdrawal of Mechanical Ventilation and Other Life Supports
62. Palliative or compassionate withdrawal of mechanical ventilator support at the end of life aims to do which of the following?
(A): optimize comfort
(B): alleviate suffering
(C): allow a natural death in patients for whom life supports are not achieving desired goals
(D): all of the above

63. The powers of the Power of Attorney may be limited by the patient, or by local laws, but generally allow the surrogate to make medical decisions on the patient's behalf when the patient is unable or chooses to defer.
(A): True
(B): False

64. Ideally, _____ discuss with each patient their prior experiences, values, preferences, goals, and minimal acceptable outcomes prior to onset of critical illness, and prior to initiation of life supports.
(A): respiratory therapists
(B): family members
(C): physicians
(D): pharmacists

65. Reducing PEEP can allow which of the following to become more prominent?
(A): pulmonary edema
(B): alveolar secretions
(C): pulmonary hemorrhage
(D): all of the above

66. _____ is an anesthetic and sedative without analgesic properties.
(A): Cephalexin
(B): Metronidazole
(C): Propofol
(D): Azithromycin

Topic: Noninvasive Ventilation in Neuromuscular Diseases
67. Respiratory muscle weakness is the main contributor to respiratory imbalance in patients with neuromuscular diseases (NMD).
(A): True
(B): False

68. The weakness of the respiratory muscles causes _____, initially during sleep, and then leading to respiratory insufficiency in the daytime.
(A): high blood pressure
(B): alveolar hypoventilation
(C): depressed diaphragm
(D): migraine

69. In Dyspnea when lying flat or immersed in water specifically suggests weakness of ___.
(A): ribs
(B): diaphragm
(C): trachea
(D): aorta

70. From a functional standpoint, neuromuscular patients can be classified into which of the following criteria?
(A): Ambulant patients, who can walk without any help
(B): Non-ambulant patients, who cannot stand being seated without any help
(C): Non-ambulant patients, who can stand seated without any help, but cannot walk without any help
(D): all of the above

71. Nasal mask and pillow mask are best suited for uncooperative patients that have a higher severity of the neuromuscular diseases (NMD).
(A): True
(B): False

72. Which of the following are the adverse events of noninvasive ventilation (NIV) masks?
(A): discomfort, skin rush or claustrophobia
(B): nasal ulceration or nasal congestion
(C): eye irritation or nasal/oral dryness
(D): all of the above

Topic: Noninvasive Monitoring of Manual Ventilation during Out-of-Hospital Cardiopulmonary Resuscitation
73. Sudden cardiac arrest is the sudden cessation of effective blood circulation due to _____ failure.
(A): liver
(B): heart
(C): kidney
(D): none of the above

74. In out-of-hospital cardiac arrest (OHCA), the first minutes are crucial as the chances of the patient to survive decrease about ____% per minute.
(A): 10
(B): 20
(C): 30
(D): 40

75. Capnography monitors the partial pressure of the CO2 in the respiratory gasses, and reflects high concentration during the exhalation phase of every ventilation.
(A): True
(B): False

76. Which of the following records the biomedical signals through the defibrillation pads?
(A): oxygen mask
(B): sphygmomanometer
(C): AEDs
(D): none of the above

Topic: Non-Invasive Ventilation of the Neonate
77. Non-invasive ventilation refers to any mode of respiratory support provided via the _____ of infants to support spontaneous breathing, without placement of an endotracheal tube.
(A): tracheal tube
(B): cardiac arteries
(C): nasal airway
(D): carotid vein

78. The ultimate goal of all non-invasive ventilation devices is to prevent which of the following?
(A): barotrauma
(B): volutrauma
(C): atelectotrauma
(D): all of the above

79. Lung growth begins in the third week of gestation during the *embryonic* phase.
(A): True
(B): False

80. In healthy neonates the functional residual capacity (FRC) is _____ mL/kg.
(A): 20-30
(B): 45-55
(C): 60-70
(D): 75-85

81. The humidified high flow nasal cannula (HHFNC) provides which of the following benefits?
(A): improved pharyngeal tone
(B): nasopharyngeal dead space washout
(C): decreased work of breathing and maintenance of FRC
(D): all of the above

Topic: Open-Circuit Mouthpiece Ventilation: Indications, Evidence and Practicalities
82. The main indication of mouthpiece ventilation (MPV) is the provision of full-time ventilatory support for patients with chronic progressive _____.
(A): diabetes
(B): neuromuscular diseases (NMD)
(C): Alzheimer's disease
(D): kidney failure

83. MPV is mainly indicated for neuromuscular patients with chronic ventilator failure when they develop nighttime hypercapnia despite optimized daytime ventilatory support.
(A): True
(B): False

84. The MPV is usually set to the volume assisted-controlled mode with a Vt between _____ L, while PEEP (or EPAP) and backup rate are set to zero or to the lowest manufacturer defined value.
(A): 0.7 and 1.5
(B): 3 and 3.5
(C): 4.5 and 6
(D): 7 and 8

85. Speaking is commonly problematic in patients with advanced respiratory disease as it requires higher than tidal inspiratory volumes and may slow the breathing rate causing breathlessness and fatigue.
(A): True
(B): False