

HOSPITAL MASS-CASUALTY DISASTER MANAGEMENT COURSE POST TEST

Directions: Use the accompanying answer sheet to record the correct answer for each of the following questions.

1. Possible disaster scenarios are so numerous that real disaster planning is ineffectual.
 - A. True
 - B. False

2. The effects of disasters cannot be predicted because their type and magnitude are the only determinants of their outcome.
 - A. True
 - B. False

3. Previous disasters in developed countries with advanced prehospital medical systems have demonstrated the following general pattern of patient flow to local hospitals:
 - A. Initially, ambulatory and possibly-exposed persons present to the nearest EDs first; the most seriously ill patients are brought later by EMS.
 - B. Many critically ill patients survive initial traumatic injuries and arrive first at the nearest ED, and usually are transported by EMS.
 - C. Few patients find alternative means of transportation to the hospital; hence, EMS transports most patients and can coordinate patient flow to local hospitals.
 - D. Federal assets set up field hospitals within an hour or two of an emergency and most patients are treated in these portable facilities.

4. All of the Class A agents can be confirmed by diagnostic tests available at all JCAHO accredited hospitals.
 - A. True
 - B. False

5. Smallpox (variola) has a rash that is, in some respects, similar to varicella. Which of the following is true:
 - A. The rash of varicella has macular, papular and pustular lesions all present at the same time on the same body parts.
 - B. The lesions of smallpox typically appear on the palms and start on the face and limbs.
 - C. In primary varicella, the rash starts on the trunk and spreads peripherally.
 - D. All of the above.

6. Smallpox lesions:
 - A. are in the same stage, either macular, papular, vesicular or pustular on a particular body part.
 - B. start centrally and spread peripherally.
 - C. spare the palms and soles.
 - D. All of the above.

7. Patients with smallpox are no longer contagious:
 - A. at the onset of the rash.

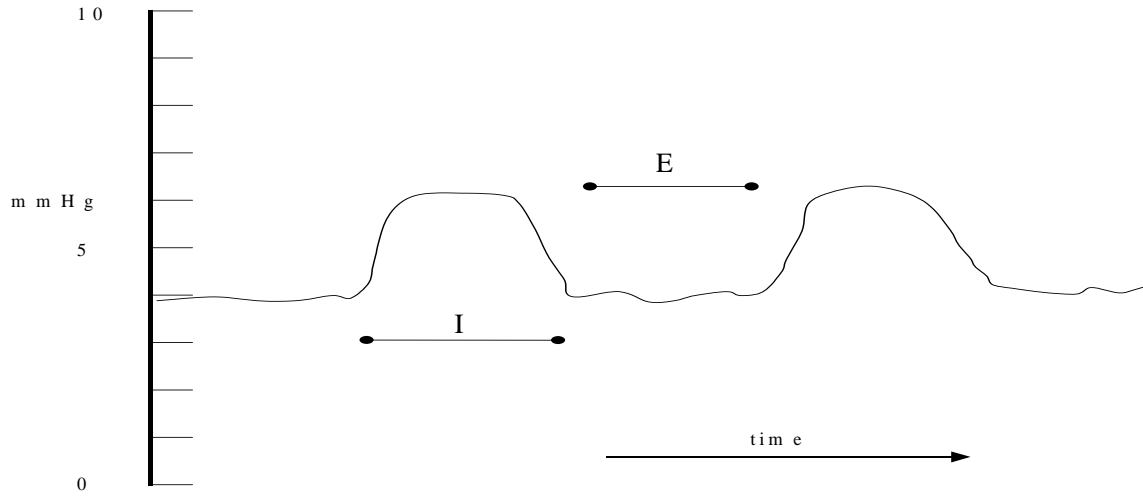
- B. when afebrile.
 - C. when the scabs of the lesions have separated.
 - D. after 7 days from the onset of the first crop of papules.
8. For both inhalational anthrax and plague, clinicians should wait to provide disease-specific antibiotics until the disease is confirmed, since early antimicrobial administration does not influence clinical outcomes.
- A. True
 - B. False
9. A widened mediastinum found on the anterior-posterior chest x-ray of victims of a presumed biological agent release is pathognomic for inhalational plague.
- A. True
 - B. False
10. The clinical triad for botulism includes the following **except**:
- A. symmetric descending paralysis
 - B. normal temperature
 - C. increased oral secretions
 - D. clear sensorium
11. Seven patients are brought to the Emergency Room with tachypnea, tachycardia, and widened pupils. Arterial blood gas analysis on the first patient shows a profound metabolic acidosis with a $\text{PaO}_2 > 500$ on a nonrebreather mask. A concurrent venous blood gas had a $\text{PvO}_2 > 150$.

Which is the most likely diagnosis?

- A. Nerve agent exposure
 - B. Chlorine gas exposure
 - C. Mass hysteria
 - D. Cyanide gastrointestinal ingestion
12. Which agent is not indicated in the treatment of nerve agent exposure?
- A. Atropine
 - B. Pralidoxime
 - C. Succinylcholine
 - D. Lorazepam
13. Which is correct regarding decontamination following exposure to an unknown chemical substance?
- A. Decontamination should await a definite diagnosis as this may change the type of decontamination.
 - B. Decontamination should be performed before allowing the victims into the medical facility.
 - C. Dry decontamination is preferred and should always be attempted.
 - D. To avoid hypothermia, patients should be allowed to put their original clothes back on after decontamination.
14. Regarding inhalational agents, which of the following is true?
- A. They have fixed times to symptom onset, regardless of amount of exposure.
 - B. The aqueous solubility determines in part the region of the respiratory tract that is likely to be most injured.

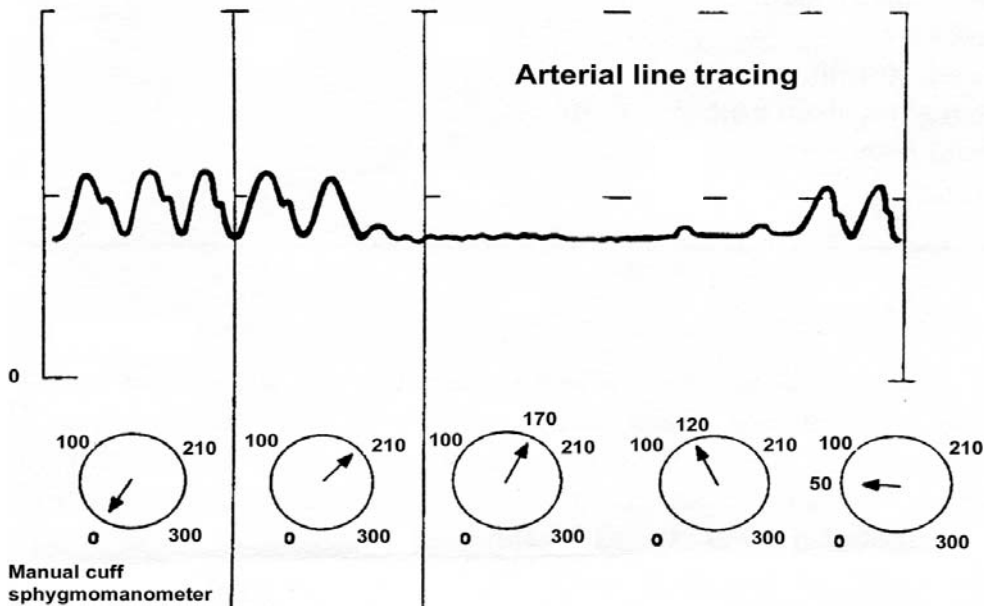
- C. All persons who will manifest symptoms due to phosgene exposure will do so immediately.
 - D. Most of these agents have specific antidotes.
15. Regarding nerve agents, which of the following is true?
- A. Pyridostigmine bromide pretreatment is employed to "protect" a population of acetylcholinesterase from rapid aging agents (e.g., soman), but is only likely to be used in military or other high risk persons.
 - B. The route of administration (inhaled versus dermal contact) may affect the speed of onset of symptoms.
 - C. Miosis is not an appropriate clinical sign for guiding continuing administration of atropine.
 - D. Atropine does not reverse the paralytic effects of nerve agents.
 - E. All of the above.
16. Therapy for nerve agent exposure should be guided by:
- A. drying secretions
 - B. resolution of muscle fasciculations
 - C. improved ventilation
 - D. A and C
 - E. All of the above
17. An industrial accident occurs and you are called by the ED to admit the first patient who was reported to have onset of nausea, vomiting and neurologic depression before EMS arrived on the scene.
- The likely total body irradiation dose and expected prognosis for the patient is:
- A. <1.25 Gy; near 100% survival.
 - B. 1.25-3.00 Gy; may have hematologic problems, but likely to survive at tertiary facility with advanced supportive care and cytokine support.
 - C. >8.00 Gy; likely to die despite aggressive critical care support.
18. Injuries due to a dirty bomb are more likely to be a direct result of the radiation than due to trauma; therefore, triage and immediate treatment should focus on radiation injuries.
- A. True
 - B. False
19. Which of the following is false about a person who received approximately 5.00 Gy of total body irradiation due to exposure to a radiologic source?
- A. This person will present with near-immediate onset CNS abnormalities and intractable nausea and is expected to die within a few days.
 - B. The patient will initially have GI symptoms, followed by a latent period, but in the following weeks may have bone marrow suppression.
 - C. Morbidity and mortality are typically related to infection and hemorrhage.
 - D. Cytokine therapy and supportive critical care may improve survival.
20. Most patients injured and surviving to ED admission after an open-space explosion should undergo chest and abdominal CT scans, since the incidence of occult life-threatening injuries is high.
- A. True
 - B. False

21. The following surgical needs appear in most explosions or sudden disasters:
- A. most patients, in fact, do not need surgery.
 - B. most surgical interventions will not need to be done immediately.
 - C. immediate surgical needs tend to be neurosurgical, orthopedic, or vascular.
 - D. All of the above.
22. "Isolation" separates or restricts the movement of well persons who presumably have been exposed to a contagious disease.
- A. True
 - B. False
23. Individuals participating in a Hospital Emergency Incident Command System (HEICS) should:
- A. help with any problem that may arise.
 - B. communicate directly with the senior medical officer for instructions.
 - C. rely on the hospital pager system and telephones to learn to whom to respond and how.
 - D. be provided in advance with action cards or job action sheets.
24. Use of HEICS in hospitals:
- A. provides an organizational link to outside agencies.
 - B. is the plan required by The Joint Commission.
 - C. employs Job Action Sheets for each position.
 - D. A and C
 - E. All of the above.
25. Which one of the following factors does **not** lead to erroneous pulse oximetry readings?
- A. Dark nail polish
 - B. Vasoconstriction
 - C. Hematocrit of 27%
 - D. Elevated level of carboxyhemoglobin
26. The graph below depicts a central venous pressure (CVP) tracing. The patient is **not** breathing spontaneously and is on mechanical ventilation with the inspiratory (I) and expiratory (E) periods marked on the tracing. What is the patient's CVP, in **mm Hg**?



- A. 4
- B. 6
- C. 8
- D. Cannot determine the CVP based on this tracing.

27. In the following illustration, the systolic pressure obtained by a return to flow measurement is:



- A. 50 mm Hg
- B. 120 mm Hg
- C. 170 mm Hg
- D. 210 mm Hg

28. Which one of the following statements regarding arterial cannulation and monitoring is true?

- A. In adults, the dorsalis pedis artery is the most reliable site for pressure monitoring.
- B. Complications of arterial catheters include blood loss, arterial thrombosis, and distal embolization.
- C. Use of an arterial catheter can be justified for arterial blood sampling if \leq two samples are required over a 24-hour period.
- D. Return to flow is a poor validation method of invasive arterial pressure measurements.

29. Strategic National Stockpile (SNS) contents for disaster support include the following:

- A. Pharmaceutical cache
- B. Mechanical ventilators
- C. Silvadene cream
- D. Chempak agent antidote kits
- E. All of the above

30. SNS supplies should begin arriving at a disaster site within:

- A. 4 hours
- B. 12 hours
- C. 24 hours
- D. 72 hours

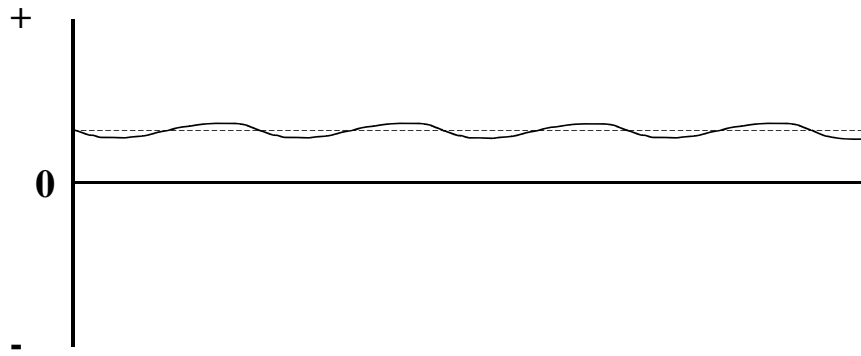
31. When disaster strikes, particularly in a biological agent release, critical care resources will be constrained. Mass critical care interventions that may prove useful include each of the following **except**:
- A. mechanical ventilators
 - B. Swan-Ganz catheters
 - C. hemodynamic support
 - D. prophylactic/preventative interventions
32. Triage operations for patients with medical illnesses, such as those seen in a biological agent release, have well-defined protocols to guide implementation.
- A. True
 - B. False
33. Which classification of shock is **most** consistent with the hemodynamic profile below?

Pulmonary artery occlusion pressure	Cardiac output	System vascular resistance
< or normal	< or normal or >	<

- A. Obstructive
- B. Distributive
- C. Cardiogenic
- D. Hypovolemic

34. A 75-year-old, previously healthy female has protracted nausea and vomiting. Electrolytes reveal sodium 144 mEq/L (144 mmol/L), chloride 95 mEq/L (95 mmol/L), and potassium 2.2 mEq/L (2.2 mmol/L). Her blood pressure is 74/46 mm Hg and pulse is 130 beats/min. Lung fields are clear to auscultation. Fluid resuscitation is **best** initiated with which one of the following?
- A. 500 mL hetastarch over 60 min.
 - B. 250 mL 5% albumin over 30 min.
 - C. One liter normal saline over 30 min.
 - D. One liter D₅ ½ normal saline over 30 min.
35. Distributive shock therapy includes:
- A. intravascular volume support
 - B. the required use of PA catheter
 - C. vasopressors for MAP < 60 mm Hg
 - D. A and C
 - E. All of the above
36. A patient who sustained blunt abdominal trauma in an explosion required a laparotomy for peritoneal injuries. Twenty-four hours following surgery, he becomes progressively oliguric. Renal studies include the following:
- i. BUN/Cr = 30
 - ii. Urine specific gravity 1.030
 - iii. Urine Na⁺ 15 mEq/L

- Initial** management of this patient should include each of the following except:
- A. increase IV fluids
 - B. consider measurement of intravascular volume
 - C. discontinue use of ketorolac
 - D. institute renal-dose dopamine infusion
37. The most commonly used pain assessment tool in the ICU is:
- A. Verbal rating scale (VRS)
 - B. Numeric rating scale (NRS)
 - C. Visual analog scale (VAS)
 - D. Train of four monitoring with a neuromuscular stimulator
38. Inadequate analgesia can result in:
- A. the stress response
 - B. disorientation/agitation
 - C. respiratory splinting/atelectasis
 - D. All of the above
39. The most serious complication from the use of haloperidol is:
- A. extrapyramidal symptoms
 - B. ileus
 - C. QT prolongation leading to Torsades
 - D. respiratory depression
40. The most common hospital-acquired infection in the ICU is:
- A. urinary tract infection
 - B. pneumonia
 - C. blood stream infection
 - D. skin infection
41. The following actions minimize the risk of developing a hospital-acquired infection:
- A. elevating the head of the bed
 - B. **physician**-directed weaning toward extubation
 - C. strict hand washing
 - D. A and C
 - E. All of the above
42. ICU patients shown to be at risk for gastrointestinal bleeding include all of the following **except**:
- A. mechanically ventilated patients
 - B. patients with an underlying coagulopathy
 - C. patients suffering from acute coronary syndrome
 - D. patients with intra-cerebral hemorrhage
43. The following airway pressure tracing **best** represents which form of mechanical ventilation?



- A. Assist-control ventilation
- B. Pressure controlled ventilation with inverse I:E ratio
- C. Spontaneous ventilation with continuous positive airway pressure
- D. Synchronized intermittent mandatory ventilation with pressure support

44. A 68-year-old patient develops nosocomial pneumonia requiring intubation and initiation of mechanical ventilation. Her initial blood pressure drops from 110/60 mm Hg to 85/48 mm Hg shortly after intubation. Which one of the following statements is **true**?
- A. Bilateral needle thoracostomies should be attempted immediately before completing further evaluation.
 - B. Consider tension pneumothorax first when hypotension occurs immediately after initiation of mechanical ventilation.
 - C. The development of auto-PEEP cannot contribute to hypotension in this patient, particularly in the presence of obstructive airway disease.
 - D. If hypotension is due to increased intrathoracic pressure, the tidal volume should be decreased until blood pressure returns to normal.
45. A 54-year-old female with an unstable cervical fracture following a building collapse is placed in a halo for immobilization following surgical stabilization. On the second postoperative day, she develops acute hypoxemic respiratory failure that improves significantly with noninvasive positive pressure ventilation. The decision is made to intubate the patient due to gradual worsening, although it is not emergent at this time. Which of the following is the best option for airway management?
- A. Obtain expert consultation for flexible fiberoptic intubation
 - B. Rapid sequence intubation with an orotracheal tube
 - C. Immediate surgical cricothyrotomy
 - D. Needle cricothyrotomy
46. A 32-year-old male on mechanical ventilation following an explosion with multiple injuries, including a femur fracture and severe head injury, is noted to be in asystole. Which one of the following is the most appropriate initial step in his management?
- A. Administer vasoactive agents to increase the blood pressure and evaluate for a tension pneumothorax.
 - B. Check the ventilator to see if it is malfunctioning while obtaining a 12-lead electrocardiogram.
 - C. Disconnect the patient from the ventilator and initiate bag-valve ventilation with 100% oxygen.
 - D. Suction the airway and administer 1 liter of normal saline or lactated Ringer's solution.
47. Which one of the following statements regarding a suspected tension pneumothorax is most correct?
- A. It must be confirmed by chest radiograph prior to treatment.
 - B. Needle decompression must be immediate, followed by tube thoracostomy.
 - C. Pulseless electrical activity (PEA) favors a cardiac etiology for the patient's deterioration.
 - D. Hypotension or shock must be treated immediately with volume resuscitation and pressor agents.
48. Which one of the following statements concerning initial mechanical ventilation settings in a patient with acute respiratory distress syndrome is **most correct**?
- A. Fraction of inspired oxygen (F_iO_2) should be at 1.0.

- B. Starting tidal volume (ventilator breath) should be set for 10-12 ml/kg.
- C. Positive end-expiratory pressure (PEEP) should be set at 15 cm H₂O
- D. Following PEEP application, full recruitment and maximum improvement in oxygenation is expected within 5 minutes.

49. Which one of the following is the **least likely** cause of hypotension following intubation and initiation of mechanical ventilation?
- A. Pulmonary embolism
 - B. Auto-PEEP
 - C. Tension pneumothorax
 - D. Initiation of positive pressure ventilation
50. Which one of the following statements regarding pressure support ventilation (PSV) is **most correct**?
- A. Pressure support level varies breath-to-breath depending on patient effort.
 - B. Tidal volume will decrease with a decrease in lung compliance.
 - C. A minimum number of ventilator breaths are assured.
 - D. Increasing levels of pressure support increase the patient's work of breathing.