

UNIT TERMINAL OBJECTIVE

- 4-2 At the completion of this unit, the EMT-Enhanced student will be able to utilize the assessment findings to formulate a field impression and implement the treatment plan for the patient with hemorrhage or shock.

COGNITIVE OBJECTIVES

At the completion of this unit, the EMT-Enhanced student will be able to:

- 4-2.1 Describe the epidemiology, including the morbidity, mortality and prevention strategies for shock and hemorrhage. (C-1)
- 4-2.2 Discuss the various types and degrees of hemorrhage and shock. (C-1)
- 4-2.4 Discuss the assessment findings associated with hemorrhage and shock. (C-1)
- 4-2.5 Identify the need for intervention and transport of the patient with hemorrhage or shock. (C-1)
- 4-2.6 Discuss the treatment plan and management of hemorrhage and shock. (C-1)
- 4-2.7 Discuss the management of external and internal hemorrhage. (C-1)
- 4-2.8 Differentiate between controlled and uncontrolled hemorrhage. (C-3)
- 4-2.9 Differentiate between the administration rate and amount of IV fluid in a patient with controlled versus uncontrolled hemorrhage. (C-3)
- 4-2.37 Synthesize assessment findings and patient history information to form a field impression for the patient with hemorrhage or shock. (C-3)
- 4-2.38 Develop, execute, and evaluate a treatment plan based on the field impression for the hemorrhage or shock patient. (C-3)

AFFECTIVE OBJECTIVES

None identified for this unit.

PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the EMT-Enhanced student will be able to:

- 4-2.40 Demonstrate the assessment of a patient with signs and symptoms of hypovolemic shock. (P-2)
- 4-2.41 Demonstrate the management of a patient with signs and symptoms of hypovolemic shock. (P-2)

DECLARATIVE

- 1) Pathophysiology, assessment, and management of hemorrhage
 - a) Hemorrhage
 - i) Epidemiology
 - (1) Incidence
 - (2) Morbidity/ mortality
 - (3) Prevention strategies
 - ii) Pathophysiology
 - (1) Location
 - (a) External
 - (i) Controlled
 - (ii) Uncontrolled
 - (b) Internal
 - (i) Trauma
 - (ii) Non-trauma
 1. Common sites
 2. Uncommon sites
 - (iii) Controlled
 - (iv) Uncontrolled
 - (2) Anatomical type
 - (a) Arterial
 - (b) Venous
 - (c) Capillary
 - (3) Timing
 - (a) Acute
 - (b) Chronic
 - (4) Severity
 - (a) Amounts of blood loss tolerated by
 - (i) Adults
 - (ii) Children
 - (iii) Infants
 - (5) Physiological response to hemorrhage
 - (a) Clotting
 - (b) Localized vasoconstriction
 - (6) **Assessment**
 - (a) **Early or compensated**
 - (i) **Tachycardia**
 - (ii) **Pale, cool skin**
 - (iii) **Diaphoresis**
 - (iv) **Level of consciousness**
 1. **Normal**
 2. **Anxious or apprehensive**
 - (v) **Blood pressure maintained**
 - (vi) **Narrow pulse pressure**
 1. **Pulse pressure is the difference between the systolic and diastolic pressures, i.e., pulse pressure = systolic - diastolic**
 2. **Pulse pressure reflects the tone of the arterial system and is more sensitive to changes in perfusion than the systolic or diastolic alone**

- (vii) **Positive orthostatic tilt test**
- (viii) **Dry mucosa**
- (ix) **Complaints of thirst**
- (x) **Weakness**
- (xi) **Possible delay of capillary refill**
- (b) **Late or progressive (Decompensated)**
 - (i) **Extreme tachycardia**
 - (ii) **Extreme pale, cool skin**
 - (iii) **Diaphoresis**
 - (iv) **Significant decrease in level of consciousness**
 - (v) **Hypotension**
 - (vi) **Dry mucosa**
 - (vii) **Nausea**
 - (viii) **Cyanosis with white waxy-looking skin**

- iii) **Assessment**
 - (1) Bright red blood from wound, mouth, rectum, or other orifice
 - (2) Coffee ground appearance of vomitus
 - (3) Melena
 - (4) Hematochezia
 - (5) Dizziness or syncope on sitting or standing
 - (6) Orthostatic hypotension
 - (7) Signs and symptoms of hypovolemic shock
- iv) **Management**
 - (1) Airway and ventilatory support
 - (2) Circulatory support
 - (a) Bleeding from nose or ears after head trauma
 - (i) Refrain from applying pressure
 - (ii) Apply loose sterile dressing to protect from infection
 - (b) Bleeding from other areas
 - (i) Control bleeding
 - 1. Direct pressure
 - 2. Elevation if appropriate
 - 3. Pressure points
 - 4. Tourniquet
 - 5. Splinting
 - 6. Packing of large gaping wounds with sterile dressings
 - 7. PASG
 - (ii) Apply sterile dressing and pressure bandage
 - (c) Transport considerations
 - (d) Psychological support/ communication strategies

2) Pathophysiology, assessment, and management of shock

a) Shock

i) Management

- (1) Airway and ventilatory support
 - (a) Ventilate and suction as necessary
 - (b) Administer high concentration oxygen
 - (c) Reduce increased intrathoracic pressure in tension pneumothorax
- (2) Circulatory support
 - (a) Hemorrhage control
 - (b) Intravenous volume expanders

- (i) Types
 1. Isotonic solutions
 2. Hypertonic solutions
 3. Synthetic solutions
 - (ii) Rate of administration
 1. External hemorrhage that can be controlled
 2. External hemorrhage that cannot be controlled
 3. Internal hemorrhage
 - a. Blunt trauma
 - b. Penetrating trauma
 - (c) Pneumatic anti-shock garment (PASG)
 - (i) Effects
 1. Increased arterial blood pressure above garment
 2. Increased systemic vascular resistance
 3. Immobilization of pelvis and possibly lower extremities
 4. Increased intra-abdominal pressure
 - (ii) Mechanism
 1. Increases systemic vascular resistance through direct compression of tissues and blood vessels
 2. Negligible autotransfusion effect
 - (iii) Indications
 1. Hypoperfusion with unstable pelvis
 2. Conditions of decreased SVR not corrected by other means
 3. As approved locally, other conditions characterized by hypoperfusion with hypotension
 4. Research studies
 - (iv) Contraindications
 1. Advanced pregnancy (no inflation of abdominal compartment)
 2. Object impaled in abdomen or evisceration (no inflation of abdominal compartment)
 3. Ruptured diaphragm
 4. Cardiogenic shock
 5. Pulmonary edema
 - (d) **Recognize the need for** Needle chest decompression of tension pneumothorax to improve impaired cardiac output
 - (e) Recognize the need for expeditious transport of suspected cardiac tamponade for pericardiocentesis
- (3) **Fluid Management**
- Controlled external bleeding with signs & symptoms of shock**
 - Uncontrolled external and/or internal bleed with signs & symptoms of shock**
 - Traumatic Cardiac Arrest**
 - (4) Non-pharmacological interventions
 - (5) Transport considerations
 - (a) Indications for rapid transport
 - (b) Indications for transport to a trauma center
 - (c) Considerations for air medical transportation
 - (6) Psychological support/ communication strategies