Note: This Packet contains the latest Trauma guidelines, review information and pre-test. It is important that participants review the textbook, complete the pre-test and be familiar with the PHTLS assessment and management criteria prior to the course.

The pre-test will be collected at the beginning of the class.

Feel free to contact our office should you have any questions.
Course Plan- 2 Day

Day 1
15 minutes Welcome and Introduction
60 minutes Baselines
30 minutes Lesson 1: Introduction
15 minutes Break
45 minutes Lesson 2: Physiology of Life and Death
30 minutes Lesson 3: Scene Assessment and Primary Assessment
45 minutes Lesson 4: Airway
60 minutes Lunch
45 minutes Lesson 5: Breathing, Ventilation, and Oxygenation
60 minutes Lesson 6: Circulation, Hemorrhage, and Shock
15 minutes Break
45 minutes Patient Simulations 1A - AB
45 minutes Patient Simulations 1B - AB
60 minutes Lesson 7: Disability - Part 1
Adjourn

Day 2
30 minutes Group Discussion and Review Day One
45 minutes Lesson 7: Disability - Part 2
30 minutes Lesson 8: Secondary Assessment
15 minutes Break
45 minutes Patient Simulations 2A - CD
45 minutes Patient Simulations 2B - CD
60 minutes Lunch
30 minutes Lesson 9: Special Considerations
45 minutes Patient Simulations 3A - M&P
45 minutes Patient Simulations 3B - M&P
15 minutes Break
30 minutes Lesson 10: Summation
90 minutes Final Written Evaluation and Final Evaluation Stations
15 minutes Questions and Adjourn

The optional lecture and optional skill stations, if offered, are to be given over and above the required program as outlined above.
PHTLS Assessment Sequence

Assessment
- Assess Scene
  - Safety
  - Situation

Resources needed?
- YES → Notify appropriate agencies
- NO → Proceed when safe

Standard Precautions

Assess Patient

Airway
- Secure airway as needed
- NO → Patent?
  - YES → Breathing?
    - VR < 10 → Assist ventilation
    - VR 12-20 → Auscultate breath sounds
    - VR > 20 → Assist ventilation

Breathing?
- O₂ to maintain SpO₂ > 95%

External hemorrhage?
- YES → Control as appropriate
- NO → Assess for shock

Circulation
- Expose/ environment
- Life threats present?
- YES → Spinal immobilization as indicated
- NO → Assess vital signs
- Secondary survey

Spinal immobilization as indicated
- Consider PASG
- Transport

Reassess primary survey
- YES → IV fluid therapy
- NO → Definitive field care

Definitive field care
- Spinal immobilization as indicated
- Transport to appropriate facility

Notes for Assessment Algorithm

1. Consider pleural decompression only if ALL are present:
   - Diminished or absent breath sounds
   - Increased work of breathing or difficulty ventilating with bag-valve-mask
   - Decompensated shock/hypotension (SBP < 90 mm Hg)
   - Perform bilateral pleural decompression only if patient is receiving positive pressure ventilation

2. External hemorrhage control:
   - Direct pressure/pressure dressing
   - Tourniquet
   - Consider topical hemostatic agent for prolonged transport

3. Shock: tachycardia; cool, diaphoretic, pallorous skin; anxiety; diminished or absent peripheral pulses

4. Quick check for other life-threatening conditions; cover patient to preserve body heat

5. PASG should be considered for suspected unstable pelvic fracture with hypotension

6. Transport should not be delayed to initiate IV fluid therapy. Initiate two large-bore IV lines:
   - uncontrolled bleed SBP 80-90, controlled bleed 1-2 liters titrate SBP 80-90

7. Splint fractures and dress wounds as needed
Types of Shock: There are three types of shock:

- **Hypovolemic shock**
  - Vascular volume smaller than normal vascular size
  - Loss of blood and fluid
  - Hemorrhagic shock
  - Loss of fluid and electrolytes
  - Dehydration

- **Distributive shock**
  - Vascular space is larger than normal
  - Neurogenic “shock” (hypotension)
  - Psychogenic shock
  - Septic shock
  - Anaphylactic shock

- **Cardiogenic shock**
  - Pump failure

### Classification of Hemorrhagic Shock

<table>
<thead>
<tr>
<th>Blood loss (mL)</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
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</thead>
<tbody>
<tr>
<td>Blood loss (% vol)</td>
<td>Up to 750</td>
<td>750-1500</td>
<td>1500-2000</td>
<td>&gt;2000</td>
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<tr>
<td>Pulse rate</td>
<td>&lt;100</td>
<td>100-120</td>
<td>120-140</td>
<td>&gt;140</td>
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<td>Blood pressure</td>
<td>Normal</td>
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<td>Decreased</td>
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<td>Respiratory rate</td>
<td>14-20</td>
<td>20-30</td>
<td>30-40</td>
<td>&gt;35</td>
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<tr>
<td>Urine output (mL/hr)</td>
<td>&gt;30</td>
<td>20-30</td>
<td>5-15</td>
<td>Negligible</td>
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<td>CNS/ mental status</td>
<td>Slightly anxious</td>
<td>Mildly anxious</td>
<td>Anxious, confused</td>
<td>Confused, lethargic</td>
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#### Signs Associated with Types of Shock

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<tr>
<th>Vital Sign</th>
<th>Hypovolemic</th>
<th>Neurogenic</th>
<th>Septic</th>
<th>Cardiogenic</th>
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<tr>
<td>Skin color</td>
<td>Pale, cyanotic</td>
<td>Pink</td>
<td>Pale, mottled</td>
<td>Drops</td>
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<td>Blood pressure</td>
<td>Drops</td>
<td>Drops</td>
<td>Drops</td>
<td>Drops</td>
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<tr>
<td>Level of consciousness</td>
<td>Altered</td>
<td>Lucid</td>
<td>Altered</td>
<td>Altered</td>
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<tr>
<td>Capillary refilling time</td>
<td>Slowed</td>
<td>Normal</td>
<td>Slowed</td>
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### Shock Assessment

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<tr>
<th>Vital Sign</th>
<th>Compensated</th>
<th>Decompensated</th>
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<tbody>
<tr>
<td>Pulse</td>
<td>Increased; tachycardia</td>
<td>Greatly increased; marked tachycardia that can progress to bradycardia</td>
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<tr>
<td>Skin</td>
<td>White, cool, moist</td>
<td>White, cold waxy</td>
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<tr>
<td>Blood pressure range</td>
<td>Normal</td>
<td>Decreased</td>
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<tr>
<td>Level of consciousness</td>
<td>Unaltered</td>
<td>Altered, ranging from disoriented to coma</td>
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### Type of Fracture Blood Loss Potential

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<tr>
<th>Fracture</th>
<th>Potential</th>
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<tr>
<td>Rib</td>
<td>125 mL</td>
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<td>Radius or ulna</td>
<td>250-500 mL</td>
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<td>Humerus</td>
<td>500-750 mL</td>
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<tr>
<td>Tibia or fibula</td>
<td>500-1000 mL</td>
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<tr>
<td>Femur</td>
<td>1000-2000 mL</td>
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<tr>
<td>Pelvis</td>
<td>1000-unlimited mL</td>
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#### Management

- Ensure oxygenation and ventilation
- Control hemorrhage (external or internal)
  - External: direct pressure or tourniquet or homeostatic agent
  - Internal: direct pressure (extremity immobilization/ PASG for pelvis/ low abd.)* Consider Tranexamic Acid (TXA) for uncontrollable bleeds.
- Move toward a definitive facility
- Control body temp (lower the pt)
- Fluid replacement for Class II, III, or IV shock
  - Ideally blood or packed RBC’s (though not available prehospital)
- Isotonic crystalloids (Preferable no LR), replace at 3mL’s per mL’s blood loss (ideally warm)
  - Controllable bleeds: 1-2 liters (adult) (20 mL/kg peds) – Titrated to SBP 80-90 mmHg
  - Uncontrolled (internal) bleeds: the least amount of fluid required to maintain SBP 80-90 mmHg
Spine Board Debate- Pg. 305

It is agreed that the long board is an appropriate device for extrication and patient movement on scene and to a stretcher, but 2015 brought about documented controversy as to its effectiveness at truly immobilizing the spine and its benefits; Key Issues:

- There are no documented studies to support that straight rigid board immobilization with a collar is beneficial.
- Some patients’ anatomy actually flexes the head forward while others hyperextend the head when placed on a board.
- Patients will all begin to complain of neck and back pain if left on a hard board.
- Skin breakdown can occur at points that contact the board.
- Obese patients are at risk for positional asphyxia.
- Emergency airway procedures are more difficult to perform on immobilized patients.

The lack of supporting benefit and the growing potential for detrimental side effects has led many areas to decrease or completely remove the use of spine boards for anything more than extrication or movement. Instead opting for placing a collar on the patient and lying the spine on the stretcher.

At the publishing of the 8th Edition text (2016) this remains a controversial change and may be different by region.
### PHTLS 8th Ed. FINAL EVALUATION STATION FLOW SHEET

**Student (Leader):**

**Evaluator:** _____________________________ **Scenario Number:** _____________

**Beginning Time:** __________________________  **Ending Time:** _______________

<table>
<thead>
<tr>
<th>Completed</th>
<th><strong>Assessment &amp; Treatment</strong></th>
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<tr>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Identify Safe Scene</td>
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<td>Proper Standard Precautions</td>
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<td>Perform Primary Survey</td>
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<td>Level of Consciousness/Response</td>
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<td>Airway</td>
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<td>Breathing</td>
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<td>Ventilation/Air Exchange</td>
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<td>Circulation/Perfusion</td>
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<td>External Hemorrhage Control</td>
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<td>Pulse</td>
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<td>Skin Condition</td>
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<td>Disability</td>
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<tr>
<td>Exposure of All Critical Body Areas for Assessment</td>
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<tr>
<td>Properly Identify Critical and Non-Critical Trauma Patients</td>
<td></td>
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<tr>
<td>Use of Appropriate Spinal Immobilization Technique(s)</td>
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<tr>
<td>Proper Use of Padding/Buttress Material</td>
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<tr>
<td>Identification of All Life-Threatening Injuries</td>
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<tr>
<td>Proper Treatment of All Life-Threatening Injuries</td>
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<tr>
<td>Performed Only Lifesaving Treatment(s) While On-Scene</td>
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<tr>
<td>Timely Transported When Indicated</td>
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<tr>
<td>Appropriate Level Trauma Facility When Indicated</td>
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<tr>
<td>Identification of All Non-Critical Injuries</td>
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<tr>
<td>Proper Treatment Performed En-Route</td>
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<tr>
<td>Completed Secondary Survey When Indicated</td>
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<tr>
<td>Completed Scenario Within 10 Minutes On-Scene Time</td>
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<tr>
<td>Reassessment of Patient's Conditions</td>
<td></td>
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<tr>
<td>Safety Observed Throughout Scenarios</td>
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<tr>
<td>Worked Together as A Team</td>
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</table>

Any mark(s) within the critical criteria area would indicate the need for the group to repeat the station. Only mark those comments that apply to the scenario. Please document rationale for any checked critical criteria in the notation area.

**Critical Criteria**

- Failure to utilize proper standard precaution techniques
- Failure to identify safe scene
- Failure to perform adequate/complete primary safety
- Failure to identify all life-threatening injuries/conditions
- Failure to immediately treat life-threatening injuries/conditions
- Failure to identify critical patient based on assessment
- Performed unnecessary treatment on-scene
- Performed secondary survey before primary survey
- Failure to assess and treat noncritical injuries
- Failure to provide timely transport to an appropriate level trauma facility
- Failure to reassess the patient’s condition
- Failure to perform scenario in a safe manner
- Failure to perform in a team fashion
- Failure to complete scenario within 10 minutes of on-scene time

**NOTES:**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Successful Station Completion:** YES _______ NO _______
1. You arrive at the scene of a motor vehicle collision in which a vehicle struck a tree. Which is the best indicator of potential injury?
A) Circumference of the vehicle
B) Diameter of the tree
C) Mass of the vehicle
D) Speed of the vehicle

2. The potential for death or serious injury is greatest in which of the following motor vehicle collisions?
A) Down and under
B) Ejection from vehicle
C) Lateral compression
D) Up and over

3. Bilateral femur fractures are most often associated with which type of motorcycle crash?
A) Angular impact
B) Bike-road impact
C) Head-on impact
D) Rear impact

4. Which is the preferred fluid for resuscitation of hemorrhagic shock in the prehospital setting?
A) 5% dextrose in water
B) 7.5% hypertonic saline
C) Hetastarch
D) Lactated Ringer’s

5. Which is the most common cause of upper airway obstruction in the trauma patient?
A) Blood
B) Teeth
C) Tongue
D) Vomitus

6. Which is the preferred adjunct device for verifying placement of an endotracheal tube in a patient with a perfusing rhythm?
A) End-tidal CO₂ monitoring (capnography)
B) Esophageal detector device
C) Pulse oximeter
D) Stethoscope

7. Which is the most important reason to maintain an open airway in the trauma patient?
A) Prevents aspiration and pneumonia
B) Prevents hypoxemia and hypercarbia
C) Prevents snoring respirations
D) Prevents the tongue from blocking the pharynx
8. Essential airway skills include manual clearing of the airway, manual maneuvers, suctioning and which of the following?
A) Dual lumen airway
B) Endotracheal intubation
C) Laryngeal mask airway
D) Oropharyngeal airway

9. Your patient is a middle aged male who crashed his motorcycle. He is unresponsive. After opening the airway using a modified jaw thrust, you note the patient has respirations at a rate of 6. Auscultation reveals breath sounds are absent on the left side. Which of the following is the most appropriate next intervention?
A) Apply a non-rebreather mask
B) Begin ventilation with a BVM
C) Insert an endotracheal tube
D) Perform a needle decompression

10. Which best describes shock?
A) Decreased Glasgow Coma Scale (GCS)
B) Flushed, dry, hot skin combined with bradycardia
C) Generalized inadequate tissue perfusion
D) Low blood pressure combined with tachycardia

11. Your patient has a deep laceration to his antecubital fossa with significant bleeding. What is the most appropriate initial action?
A) Apply a tourniquet
B) Apply direct pressure
C) Initiate rapid transport
D) Restore blood volume

12. Hypotension of unknown etiology in a trauma patient should be assumed to result from which of the following?
A) Blood loss
B) Cardiac tamponade
C) Spinal injury
D) Tension pneumothorax

13. Which assessment is most beneficial in differentiating hemorrhagic shock from neurogenic shock in the prehospital setting?
A) Abdomen
B) Blood pressure
C) Neurologic status
D) Skin

14. The body initially compensates for blood loss through activation of which of the following?
A) Parasympathetic nervous system
B) Reticular activating system
C) Spinal reflex arcs
D) Sympathetic nervous system

15. Medication used by trauma patients for pre-existing conditions may cause which of the following?
A) Herbal preparations may enhance blood clotting
B) Anti-inflammatory agents may enhance blood clotting
C) Beta blockers may prevent tachycardia with blood loss
D) Calcium channel blockers may slow the onset of shock
16. The target blood pressure for a trauma patient with suspected intraabdominal hemorrhage is which of the following?
A) 60 – 70mm Hg
B) 80 – 90 mm Hg
C) 100 – 110 mm Hg
D) 120 – 130 mm Hg

17. Which best explains the mechanism by which gas exchange is impaired in pulmonary contusion?
A) Blood in the alveoli
B) Collapse of the alveoli
C) Compression of the lung tissue
D) Partial occlusion of the bronchi

18. Which of the following is a key finding that differentiates cardiac tamponade from tension pneumothorax?
A) Distended jugular veins
B) Equal breath sounds
C) Hypotension
D) Tachycardia

19. Your patient is a 20 year old male who struck his head on a teammate’s knee while diving to catch a football. He was not wearing a helmet. He demonstrates decerebrate posturing and has a GCS score of 4. His heart rate is 58, blood pressure 180/102 and his left pupil is dilated. What is the best ventilation rate to use when managing this patient?
A) 10 breaths per minute.
B) 20 breaths per minute.
C) 30 breaths per minute.
D) 35 breaths per minute.

20. A 20 year old female was ejected from her vehicle during a high speed roll-over motor vehicle collision. She has significant bleeding from a large laceration. Your initial assessment reveals a GCS score of 7, systolic blood pressure of 70 mm Hg and pupils that are equal but respond sluggishly to light. After establishing two large bore IV lines, you should titrate the infusion rate to achieve a target blood pressure of at least
A) 60 mm Hg.
B) 70 mm Hg.
C) 80 mm Hg.
D) 90 mm Hg.

21. Which of the following is the preferred prehospital wound management for a patient with a 36% body surface area flame burn?
A) Cool moist dressings
B) Dry sterile dressings
C) Elastic bandages
D) Topical ointments

22. The most immediate life threatening condition resulting from injury to solid abdominal organs is which of the following?
A) Acute respiratory failure
B) Hemorrhage.
C) Multiple organ failure.
D) Peritonitis
23. An adult male sustained a deep laceration to his distal thigh. Bright red blood is spurting from the wound. Direct pressure is not controlling the bleeding. What is the most appropriate next step?
A) Apply a topical hemostatic agent and transport  
B) Apply a tourniquet and tighten it until bleeding stops  
C) Elevate the leg and apply pressure to the femoral artery  
D) Maintain direct pressure and transport immediately

24. An 18-year-old female was struck by a car and has sustained an apparent left femur fracture. Communication with her is hampered because she only speaks a foreign language. Which finding, by itself, does not mandate immobilization of the cervical spine?
A) Fracture of the femur  
B) Inability to communicate  
C) Mechanism of injury  
D) Tenderness over the cervical spine

25. During the primary survey of a trauma patient, you note that the patient is agitated and confused, and has multiple injuries from an altercation. Which of the following choices is the most appropriate first treatment priority?
A) Blood glucose determination  
B) Correction of possible hypoxia  
C) Full immobilization to a backboard  
D) Obtain intravenous access
<table>
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<tr>
<th>Course Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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