Note: This packet contains the latest trauma guidelines, review information and pre-test. It is mandatory that participants review the textbook, complete the pre-test and be familiar with the PHTLS assessment and management criteria prior to the course. A pre-test score of 76% is required for this course.

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

Feel free to contact our office should you have any questions

(772) 878-3085 * Fax: (772) 878-7909 * Email: info@medicaltraining.cc
597 SE Port Saint Lucie Blvd * Port Saint Lucie, Florida 34984
Visit Our Website… MedicalTraining.cc
<table>
<thead>
<tr>
<th>Duration</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 min</td>
<td>Welcome, Course Intro, Collect Pre-test – <strong>Lesson 1 (Introduction)</strong></td>
</tr>
<tr>
<td>45 min</td>
<td><strong>Lesson 2 (Scene Mgt &amp; Primary Survey)</strong> –</td>
</tr>
<tr>
<td>10 min</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 3 (Airway)</strong></td>
</tr>
<tr>
<td>10 min</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 4 (Breathing, Ventilation &amp; Oxygen)</strong> –</td>
</tr>
<tr>
<td>45-60min</td>
<td><strong>LUNCH</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 5 (Circulation)</strong></td>
</tr>
<tr>
<td>30 min</td>
<td><strong>Lesson 6 (Secondary Survey)</strong> –</td>
</tr>
<tr>
<td>10 min</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td></td>
<td>Skills Stations- 40 minutes each</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station 1: Assessment</th>
<th><strong>Skills</strong></th>
<th><strong>Case</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>-PHTLS Assessment Sequence</strong> (Practice full PHTLS sequence)</td>
<td>Baseline 1 &amp; 2</td>
</tr>
<tr>
<td></td>
<td><strong>-Helmet Removal</strong> (Sports, Motorcycle)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-Perilaryngeals Airways</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station 2: Airway</th>
<th><strong>Skills</strong></th>
<th><strong>Case</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>-Jaw Thrust</strong> (chin lift 2 rescuer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-OPA,NPA</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-BVM – 1 &amp; 2 person</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-Trauma Intubation</strong> (Neutral C-Spine, frontal, bougie)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-Cricothyrotomy</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airway Case 1, 2 (OPA &amp; NPA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airway Case 6 (Trauma ET)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airway Case 8 (Cric)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station 3: Bleeding Control &amp; Breathing Control</th>
<th><strong>Skills</strong></th>
<th><strong>Case</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>-Plural Decompression</strong> (Decomp)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-Tourniquet</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>-Wound packing</strong> (Hemostatic agents)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breathing Case 1 (Decomp)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circulation Case 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circulation Case 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circulation Case 5N</td>
<td></td>
</tr>
</tbody>
</table>

**END**
### Pre-Hospital Trauma Life Support

**Day 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 min</td>
<td><strong>Lesson 7 Part 1</strong> (Disability- Brain Injury)-</td>
</tr>
<tr>
<td>10 min</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 7 Part 2</strong> (Disability- Spinal Trauma)-</td>
</tr>
<tr>
<td>10 min</td>
<td><strong>BREAK</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 8</strong> (Special Considerations)-</td>
</tr>
<tr>
<td>45-60 min</td>
<td><strong>LUNCH</strong></td>
</tr>
<tr>
<td>60 min</td>
<td><strong>Lesson 9</strong> (Summation)-</td>
</tr>
</tbody>
</table>

**Final Scenario Evaluations- 40 minutes each**  
(Each student is team leader in 1 case)

<table>
<thead>
<tr>
<th>Station 1:</th>
<th>Skills</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Review Rapid Extrication</td>
<td>Special Case 2, 6 &amp; 14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station 2:</th>
<th>Skills</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Review IO for Trauma</td>
<td>Multi Trauma 1, 2, &amp; 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Station 3:</th>
<th>Skills</th>
<th>Case</th>
</tr>
</thead>
</table>
|            | Review Traction Splint Review Pelvic Binder | Multi Trauma 4, 5 & 6  
|            |        | Circulation Case 4 (Pelvic) |

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 min</td>
<td><strong>Written Exam</strong></td>
</tr>
</tbody>
</table>
PHTLS Assessment

Assess Scene
- Safety
- Situation

Additional resources needed?

YES
- Notify appropriate agencies

NO
- Proceed when safe

Standard precautions
- Assess Patient

Exsanguinating Hemorrhage

NO

Airway

Patient?

NO
- Secure airway as needed

YES

Breathing

VR < 10
- Assist ventilation
- Auscultate breath sounds

VR 12-20
- Auscultate breath sounds

VR > 20
- Consider assisting ventilation (\(\downarrow V_t\))
- \(O_2\) to maintain \(SpO_2 \geq 94\%\)

Circulation

YES
- External Hemorrhage?
- Control as appropriate

NO
- Assess for shock

Disability (GCS, pupils)
- Expose/environment

Life threats present?

YES

Spinal immobilization as indicated
- Scene time \(\leq 10\) minutes
- Initiate transport
- Reassess primary survey
- IV fluid therapy
- Trauma center if available

NO
- Assess vital signs
- SAMPLE history
- Secondary survey
- Reassess primary survey
- Life Threats?

NO
- Definitive field care
- Spinal immobilization as indicated
- Transport
- Closest appropriate facility

Notes for Assessment Algorithm

1. Follow airway management algorithm
2. Consider pleural decompression only if ALL 3 are present:
   - Diminished or absent breath sounds
   - Increased work of breathing or difficulty ventilating with bag-mask device
   - Decompensated shock/hypotension (\(SAP \geq 90\) mm Hg)
   - Perform bilateral pleural decompression only if patient is receiving positive pressure ventilation.
3. External hemorrhage control:
   - Direct pressure/pressure dressing
   - Tourniquet
   - Consider topical hemostatic agent for prolonged transport.
4. Shock: tachycardia; cool, diaphoretic, pallor, dusky skin; anxiety; diminished or absent peripheral pulses
5. Quick check for other life-threatening conditions; cover patient to preserve body heat
7. Scene time should be limited to 10 minutes or less for patients with life-threatening injuries unless extenuating circumstances exist.
8. Transport should not be delayed in initiate IV fluid therapy. Initiate intravenous access; see managing volume resuscitation algorithm
9. SAMPLE: symptoms, allergies, medications, past medical/surgical history, last meal, events leading up to injury
10. Splint fractures and dress wounds as needed
INDICATIONS FOR SPINAL IMMOBILIZATION

Blunt trauma with concerning mechanism of injury

Altered level of consciousness (GCS < 15)

Yes
IMMOBILIZE
Rapid transport

No
Spinal pain or tenderness? or Neurologic deficit or complaint? or Anatomic deformity of spine?

Yes
IMMOBILIZE
Transport

No

Penetrating trauma to head, neck, or torso

IMMOBILIZATION NOT INDICATED
Rapid transport

Notes:

1 Distracting injury

Any injury that may have the potential to impair the patient’s ability to appreciate other injuries. Examples of distracting injuries include a) long bone fracture, b) a visceral injury requiring surgical consultation, c) a large laceration, degloving injury, or crush injury, d) large burns, or e) any other injury producing acute functional impairment.


2 Inability to communicate.

Any patients who, for reasons not specified above, cannot clearly communicate so as to actively participate in their assessment. Examples: speech or hearing impaired, those who only speech a foreign language, and small children.
**Spine Board Debate**

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.

*Some protocols for ruling “in” or “out” the use of spinal immobilization are still utilized.*
There are three types of shock:

- **Hypovolemic shock**
  - Vascular volume smaller than normal vascular size
  - Loss of fluid and electrolytes
    - Dehydration
  - Loss of blood and fluid
  - Hemorrhagic shock
- **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>Class</th>
<th>Blood loss (mL)</th>
<th>Blood loss (% vol)</th>
<th>Pulse rate</th>
<th>Blood pressure</th>
<th>Pulse pressure</th>
<th>Respiratory rate</th>
<th>Urine output (mL/hr)</th>
<th>CNS/mental status</th>
<th>Fluid replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Up to 750</td>
<td>Up to 15%</td>
<td>&lt;100</td>
<td>Normal</td>
<td>Normal or increased</td>
<td>14-20</td>
<td>&gt;30</td>
<td>Slightly anxious</td>
<td>Crystalloid</td>
</tr>
<tr>
<td>II</td>
<td>750-1500</td>
<td>15%-30%</td>
<td>100-120</td>
<td>Normal</td>
<td>Decreased</td>
<td>20-30</td>
<td>20-30</td>
<td>Mildly anxious</td>
<td>Crystalloid</td>
</tr>
<tr>
<td>III</td>
<td>1500-2000</td>
<td>30%-40%</td>
<td>120-140</td>
<td>Decreased</td>
<td>Decreased</td>
<td>30-40</td>
<td>5-15</td>
<td>Anxious, confused</td>
<td>Crystalloid and blood</td>
</tr>
<tr>
<td>IV</td>
<td>&gt;2000</td>
<td>&gt;40%</td>
<td>&gt;140</td>
<td>Decreased</td>
<td>Decreased</td>
<td>&gt;35</td>
<td>Negligible</td>
<td>Confused, lethargic</td>
<td>Crystalloid and blood</td>
</tr>
</tbody>
</table>

### Signs Associated with Types of Shock

<table>
<thead>
<tr>
<th>Vital Sign</th>
<th>Hypovolemic</th>
<th>Neurogenic</th>
<th>Septic</th>
<th>Cardiogenic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin temperature</td>
<td>Cool, clammy</td>
<td>Warm, dry</td>
<td>Cool, clammy</td>
<td>Cool, clammy</td>
</tr>
<tr>
<td>Skin color</td>
<td>Pale, cyanotic</td>
<td>Pink</td>
<td>Pale, mottled</td>
<td>Pale, cyanotic</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Drops</td>
<td>Drops</td>
<td>Drops</td>
<td>Drops</td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>Altered</td>
<td>Lucid</td>
<td>Altered</td>
<td>Altered</td>
</tr>
<tr>
<td>Capillary refilling time</td>
<td>Slowed</td>
<td>Normal</td>
<td>Slowed</td>
<td>Slowed</td>
</tr>
</tbody>
</table>

### Shock Assessment

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

### 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.)
- **Move toward a definitive facility**
- Control body temp (lower the pt)
- Fluid replacement for Class II, III, or IV shock
  - Isotonic crystalloids (lactated Ringers preferred; warm if possible)
  - Ideally blood or packed RBC’s (now being used prehospital)
  - Controllable bleeds: 1-2 liters (adult) (20 mL/kg ped’s) – Titrated to SBP 80-90 mmHg
  - Uncontrolled (internal) bleeds- the least amount of fluid required to maintain SBP 80-90 mmHg

### Type of Fracture and Blood Loss Potential

<table>
<thead>
<tr>
<th>Type of Fracture</th>
<th>Blood Loss Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib</td>
<td>125 mL</td>
</tr>
<tr>
<td>Radius or ulna</td>
<td>250-500 mL</td>
</tr>
<tr>
<td>Humerus</td>
<td>500-750 mL</td>
</tr>
<tr>
<td>Tibia or fibula</td>
<td>500-1000 mL</td>
</tr>
<tr>
<td>Femur</td>
<td>1000-2000 mL</td>
</tr>
<tr>
<td>Pelvis</td>
<td>1000-unlimited mL</td>
</tr>
</tbody>
</table>
PHTLS 9th Ed. FINAL EVALUATION STATION FLOW SHEET

Student (Leader): __________________________________________
Evaluator: ____________________________________________ Scenario Number: __________
Beginning Time: ___________________________ Ending Time ______________

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

Instructor Information
This skill station involves a skier who lost control while skiing. The patient’s LOC is altered and he requires airway management and rapid transport. Follow the written scenario, and provide information to all team members as the scenario progresses or as the team members ask.

Patient Information
Moulage: Pale and diaphoretic, cyanotic lips and nails, multiple body abrasions, blood at mouth
Position: Laying on his side in a basket stretcher
Actions: Eyes open to pain, incoherent moaning, and withdraws from pain

Dispatch Information
You and your partner work for a rural emergency medical service. Your ambulance has been dispatched to a local ski resort for a skiing accident in a remote section of your response area. It is noontime in late winter, clear sky with 17°F (–8°C). The closest hospital with an emergency department is 40 minutes away by ground; the closest level I trauma center is a 60-minute ride by ground or 15 minutes by air ambulance.

Scene Assessment/General impression
Resort staff direct you to the first aid building. There you find three members of the ski patrol and the patient’s wife. The ski patrol packaged the patient and moved him to the aid station at the base of the hill. No interventions have occurred. The ski patrol reports the patient lost control and tumbled into trees. They arrived 5 minutes after the accident and his condition has not changed. The accident happened 20 minutes ago.

Primary Survey
31-year-old male, approximately 270 lb (122 kg); patient dressed in heavy winter clothing and ski boots
X: No major external hemorrhage
A: Partially obstructed—gurgling
B: Rapid and shallow
C: Fast radial pulse, skin pale and clammy
D: 8 (E-2, V-2, M-4), PERRLA, moves all four extremities
E: Various small abrasions on hands, knees where the ski suit ripped, blood at mouth

Treatments/Critical Actions
*Note: ★ icon indicates a Critical Action
- Spinal motion restriction ★
- Manual opening of the airway with suctioning of the oropharynx ★
- Insert NPA and assist ventilations with high-flow oxygen and bag mask ★
- Drug assisted intubation if within scope of practice ★
- Rapid transport to trauma center, request air medical transport ★
- Maintain body heat
- IV during transport to maintain BP at 90 mm Hg systolic

Initial Patient Impression: Critical/Rapid Transport

Secondary Survey
Initial Vital Signs
BP: 112/72 (MAP 85)
P: 150, weak
R: 32, shallow; lung sounds equal bilaterally
Skin: Pale, cool, clammy
Spo2: 86% RA; 94% O2
GCS: 8 (E-2, V-2, M-4)
Glucose: 90 mg/dL (5 mmol/l)
etco2: 38 mm Hg
Pain: Unable to obtain
Temp: 98.8°F (37.1°C)
**Body Systems**

**Head:** Obvious deformity and bleeding from jaw

**Neck:** Unremarkable

**Chest:** Equal, bilateral breath sounds and shallow

**Abdomen:** Soft, nontender

**Pelvis:** Stable

**Extremities:** Abrasion of hands and knees, scant bleeding

**Back:** Unremarkable

---

**Transport and Destination**

**Transport Timing:** Emergent/Rapid

**Transport Destination:** Trauma center

---

**Discussion Points**

- What are the basic and advanced methods to maintain an airway?
- Are there any perceived complications with the cold winter gear the patient is wearing?
COURSE: PHTLS 9th EDITION PRE-TEST
RECORD PRE-TEST ANSWERS HERE

# MISSED:  
GRADE:  
THIS SHEET WILL BE COLLECTED

1. A B C D E
2. A B C D E
3. A B C D E
4. A B C D E
5. A B C D E
6. A B C D E
7. A B C D E
8. A B C D E
9. A B C D E
10. A B C D E
11. A B C D E
12. A B C D E
13. A B C D E
14. A B C D E
15. A B C D E
16. A B C D E
17. A B C D E
18. A B C D E
19. A B C D E
20. A B C D E
21. A B C D E
22. A B C D E
23. A B C D E
24. A B C D E
25. A B C D E
1. A roofer is found on the ground following a fall. He is alert, but complaining of acute shortness of breath. Breath sounds are absent on the left. Which of the following indicators is generally not a sign of tension pneumothorax?
   a) Subcutaneous emphysema
   b) Bradycardia
   c) Distended neck veins
   d) Tracheal deviation away from the site of injury

2. A 19 y.o. male was an unrestrained passenger in a 2 car collision. He is evaluated for selective spinal immobilization. Which of the following signs might point towards the need to immobilize?
   a) Skin breakdown
   b) Obvious presence of a Colles’ fracture
   c) Altered level of consciousness
   d) Tenderness in bilateral hip areas

3. When cells are deprived of adequate oxygenation, the short term backup system that can fuel the body using stored body fat as the energy source is called:
   a) ATP molecular system
   b) Anaerobic metabolism
   c) Ketogenesis
   d) Aerobic metabolism

4. Patients with a TBI (traumatic brain injury) are challenging to treat and transport safely. Which of the following clinical markers is not considered to be an extracranial cause of secondary brain injury issues?
   a) Anemia from blood loss
   b) Hypotension
   c) Hypoxia
   d) Coup-countercoup injury

5. When treating a trauma patient, tools such as bag mask, IV fluids, and a back board to achieve a goal are called:
   a) Preferences
   b) Tactical care
   c) Principles
   d) Action Intervention
6. Receiving a call to a situation where many people are suffering from similar toxic symptoms from a chemical leak gives the responder some insight as to what additional protective gear may be needed. This is an example of:
   a) Pre arrival assessment
   b) Care alteration strategy
   c) Triage
   d) Unified command

7. A 63 y.o. gunshot victim is found to be unresponsive to stimuli with obvious asymmetric pupils. Extensor posturing is noted. What would be the preferred rate of ventilation in this individual until capnography is available?
   a) 15 b.p.m.
   b) 20 b.p.m.
   c) 10 b.p.m.
   d) 30 b.p.m.

8. A victim of chest stabbing injury has an open pneumothorax. An occlusive dressing was applied at the scene. During transport, the patient develops a sudden episode of tachycardia and respirations increase to 44. What should your next action be?
   a) Intubate with rapid sequence induction
   b) Perform an emergency cricothyrotomy
   c) Release and reapply the occlusive dressing.
   d) Perform a needle decompression.

9. A 16 y.o. surfer has sustained a shark bite and is bleeding heavily from a large irregular gash to her thigh. She writhing in pain, responsive with a weak thread pulse at 122. What would your first action be?
   a) Apply direct pressure to the wound
   b) Elevate the extremity
   c) Place a tourniquet 3 inches above the wound.
   d) Administer high concentration oxygen via mask.

10. You are called to assist a 92 y.o. woman who fell in the shower at an assisted living facility. She flexes to painful stimuli only and her pupils are fixed and dilated. BP 200/110 and respirations are 8/min. Her caregiver says she is healthy and only takes aspirin daily. What do you suspect?
    a) Stroke
    b) Concussion
    c) Subdural hematoma
    d) Subarachnoid hemorrhage
11. When assisting a patient in severe respiratory distress, the overall principle is to:
   a) Have excellent intubation skills
   b) Prevent aspiration
   c) Perform a surgical cricothyrotomy
   d) Maintain an adequate exchange of oxygen and CO2

12. The proper application of a hemostatic agent to control bleeding involves:
   a) Irrigating the wound with saline prior to application
   b) Applying the hemostatic agent directly into the wound followed by holding direct pressure to the site.
   c) Apply the hemostatic agent to the wound followed by tourniquet application.
   d) Tourniquet and elevate the affected area, then apply the hemostatic agent.

13. The purpose of the primary survey is to address the initial status of the essential criteria necessary to sustain life (A, B, C's). After addressing critical issues, the following should be done when time and situation allow:
   A) Secondary survey
   B) IV fluids
   C) Neuro exam
   D) Spinal mobilization

14. You arrive on the scene of an MVA where a pregnant female (36 weeks) is complaining of pain in the “upper seat belt area”. She feels as though the baby is poking through her stomach while complaining of a sharp tearing pain in her abdomen. She does not feel as though she is currently having any bleeding. You suspect:
   a) Prolapsed umbilical cord
   b) Placenta previa
   c) Ruptured uterus
   d) Normal sensation following seat belt trauma.

15. When a patient presents with shock like symptoms (increased HR & respiratory rate, decreased BP) without obvious injury, you must suspect:
   a) Pulmonary embolism
   b) CVA
   c) Intra-abdominal bleeding
   d) Hypoxia
16. Although IV fluids continue to be a cornerstone of trauma management, too much fluid can result in:
   a) Thrombus disruption
   b) Worsening coagulopathy
   c) Hypothermia in the trauma patient
   d) All of the above

17. Excessive hyperventilation can cause:
   a) Hypercapnia
   b) A reduction in cerebral blood flow
   c) Decreased intrathoracic pressure
   d) Burping

18. You arrive at an accident involving a minivan. Which patient would cause you the most initial concern?
   a) A patient who appears to have a spinal cord injury
   b) An elderly woman who is complaining of pelvic area pain
   c) A patient with pain upon inspiration
   d) An anxious, confused man with a depressed level of mentation

19. Unnecessary spinal immobilization can cause many adverse effects. When evaluating appropriate indicators for immobilization in a patient who could have a spinal injury, which of the following would be probable cause to immobilize vs using of some type of “rule out” criteria?
   a) Altered mental status
   b) Distracting painful injuries
   c) Communication barriers
   d) All of the above

20. An elderly man has been placed on a backboard following a fall down stairs. He is obviously not comfortable and his neck is rigid from arthritis. What next move is appropriate?
   a) Provide comfort padding behind his head and neck area
   b) Transfer him to a scoop stretcher
   c) Place a rigid cervical collar on to attempt to straighten the neck
   d) Provide IV pain medication to lessen the discomfort

21. Approximately 10-20% of pediatric burns are intentionally inflicted and should raise a red flag regarding child abuse. These burns most often present as:
   a) Scalding injuries
   b) Point of contact by a cigarette or lighter
   c) Contact burns from hot appliances (irons, curling irons)
   d) Setting fire to hair
22. A shallow pool diving injury that is sustained at the T4 level will most likely present as:
   a) Extreme respiratory distress
   b) Lack of sensation from the waist down
   c) Lack of sensation from the nipple line down
   d) Aphasia

23. A riding lawnmower flipped down an embankment causing a traumatic amputation of a woman’s arm from the elbow down. There is active bleeding. What is the first action you should take assuming the ABC’s are stable on the rapid survey?
   a) Apply a hemostatic agent to the exposed area
   b) Apply a tourniquet
   c) Apply direct pressure
   d) Start an IV

24. A driver in a head on collision was not wearing a seatbelt upon impact. At the scene you find him in severe pain with a respiratory rate of 30 with tenderness and crepitus to the affected site. You immediately suspect:
   a) C4 level fracture
   b) Flail chest
   c) Pulmonary Contusion
   d) Ruptured aorta

25. One situation that hyperventilation may be indicated for is:
   a) Hypocapnia
   b) Laryngeal edema
   c) Prolonged transport time
   d) Signs of brain herniation