Station 3:

Specific Injuries: Chest, Face, Eye, Neck,

Review of specific injuries: chest, face, eye, neck, vital signs, thoracic trauma, and shock management. (Chapters 7, 9, 10, 22, and 23.)

Skill Station:

The OEC technician will perform all the listed skills by use of discussion, skill demonstration, or completing the scenarios.

Special Note…

The OEC Instructor will demonstrate, for his group of 4, each of the following...

1. Care for an impaled object, through goggles, into the eye/head.

2. Use of commercial dressing for sucking chest wound.

3. Application of patient on backboard to address c-spine concerns/MOI. (Effective 7/1/13 – PA EMS requires any patient with a penetrating trauma to chest or abdomen to be secured to a backboard)
The OEC technician will:

- Identify the signs and symptoms of emergent injuries to the face, eye, and neck.
- Demonstrate how to care for an impaled object in the eye. (See OEC Skill 22-1, Skill Guide page 766.)
- Demonstrate how to care for a soft tissue wound to the neck.
- Identify the signs and symptoms and pathology of the following thoracic injuries:
  a) Flail chest;
  b) Sucking chest wound (OEC Skill Guide page 788);
  c) Pneumothorax;
  d) Tension Pneumothorax;
  e) Hemothorax; and
  f) Pericardial tamponade.
- Demonstrate how to assess and care for a patient with an open chest wound.
- Demonstrate the proper use of oxygen for treatment of chest injuries.
**Scenario 3-1:** You are sent to respond to an incident with a skier involved in a collision with another skier on the edge of the run. The skier went off the side of the run into a tree, breaking off a part of a tree branch which went through the patient’s goggles and into his eye. When you arrive, you find the injured skier off to the side of the run in the trees. The patient has a branch about the size of a pencil impaled into his eye and is in a great deal of pain.

Equipment and available help will be sent upon request.

**Scenario 3-2:** A patron was sitting on the deck of the lodge area having a meal and some drinks after a day of exploring the mountain. Getting up from the table, the patron slips on the deck and falls backwards into a window in the lodge, crashing through it. The patient sustains a laceration to the neck from the broken glass. Bleeding is controllable with direct pressure, and there does not appear to be any effect on the respiratory system.

Equipment and available help will be sent upon request.
**Scenario 3-3:** You receive a call to respond to a report of a skier and snowboarder colliding on a ramp in the terrain park. You find both parties on the side of the ramp. The boarder is uninjured. The 19-year-old skier was struck in the throat with the snowboard. The skier is having difficulty breathing, and has some swelling, an abrasion with minor bleeding, and bruising around the larynx.

*Equipment and available help will be sent upon request.*

**Scenario 3-4:** You are at the top of the mountain when you get a radio call to respond to a skier who has fallen and slid into a tree below the lift line. As you approach the scene and begin to make it safe, you start a conversation with the skier. As the skier turns on his side, you see blood visible on his clothes and the snow. As you approach your patient, you see a bent ski pole on the ground next to your patient. While performing your primary assessment, you discover that the patient pulled his ski pole out of his chest. As he fell, his pole broke off just below the basket, bounced up, and penetrated about 4 inches deep into the right side of his chest below the nipple line. The patient is short of breath, having difficulty breathing, and is rapidly getting worse. You hear a sucking sound coming from under his coat.

*Equipment and available help will be sent upon request.*
The Anatomy of the Chest Cavity

**Figure 23-1** The anatomy of the chest cavity.
Common Thoracic Injuries & Complications:

- Flail Chest
- Pneumothorax
- Hemothorax
- Tension Pneumothorax
- Sucking Chest Wound
- Pericardial Tamponade

Closed chest injury: a chest injury without penetration of the chest cavity.

Open chest injury: a chest injury that involves penetration of the chest wall.
Complications of Chest Injuries

(a) Air enters the chest cavity through an open chest wound or leaks from a lacerated lung. The lung cannot expand.

(b) Air continuously fills pleural space, lung collapses, pressure rises, and the trapped air compresses the heart and other lung.

(c) Blood leaks into the chest cavity from lacerated vessels or the lung itself and the lung compresses.

Figure 23-4 Three complications of chest injuries. (a) Open pneumothorax. (b) Tension pneumothorax. (c) Hemothorax.

tension pneumothorax: the accumulation of pressurized air within the pleural space; causes the displacement of the great vessels, tracheal deviation, distension of the jugular veins, and compression of the other lung.
Flail Chest: a condition in which two or more adjacent ribs are fractured in two or more places, causing a free-floating segment of the chest wall.

**Figure 23-3** A flail chest is when each of two or more adjacent ribs are fractured in two or more places.

Paradoxical motion is the inward movement of a flail chest segment upon inhalation.

**Figure 23-9** Treat flail chest by administering oxygen and gently splinting the flail segment with a blanket, pillow, or pad.
**Pericardial Tamponade**

The accumulation of blood or other fluid within the pericardial sac.

*Figure 23-5* The physical findings of pericardial tamponade.

- Distended neck veins
- Blood in the pericardial sac compresses the heart and impairs ventricular filling
- Trachea midline
Signs & Symptoms of Chest Trauma:

- Pain at the injury site that can be aggravated by breathing
- Abnormal chest wall findings: punctures, contusions, unusual chest wall motion
- Dyspnea
- Tachypnea
- Cyanosis
- Hemoptysis
- Tachycardia
- Falling blood pressure
- Labored or abnormal breath sounds
- Distended neck veins
- Tracheal deviation
- Bloodshot or outward bulging eyes
Simple Management of Serious Chest Injuries

- Rapid care for ABCD’s
- Support ventilation with bag-valve mask if needed
- Oxygen: 15 LPM via non-rebreather mask
- Immobilize spine if spinal injury suspected
- Use occlusive dressing on chest wounds, especially sucking wounds
- Rapid transport to definitive care at hospital
- Advanced Lift Support en route if available
- Consider air medical transport
Sucking Chest Wound: a chest wound that penetrates the pleura or lung, allowing air to be “sucked” into the pleural space upon each inspiration.

Figure 23-8 Taping an occlusive dressing on three sides of a sucking chest wound helps prevent a tension pneumothorax.
Scenario #1 - Station 3

Scenario 3-1 – stick impaled in eye

Patient sitting on snow facing away from rescuer with goggles in place and pencil size stick impaled into eye. Small amount of blood from under goggles on patient’s cheek (less than ½ ounce)

Patient is awake and alert denies LOC reports they just missed hitting the tree but never saw the branch and now they have severe pain.

Primary Assessment:
Airway & Breathing intact – pt. speaking clearly in complete sentences
Circulation – strong radial pulse –no active bleeding from under goggles
Neurologic – A on AVPU, isolated eye injury no MOI for spine injury

Secondary assessment:
Physical exam difficult due to goggles. Patient reports no vision in injured eye when uninjured eye is closed. Otherwise physical exam is unremarkable

(3-1) VS:
P – 130 strong regular
RR – 26 even unlabored
BP – as taken
Skin – Pink warm and dry
Temp – normal
AVPU – A mentating well, concerned about pain and vision loss

S – Eye pain
A – Bactrim
M – None
P – R ACL repair last year
L – Patient’s actual INS& OUTs
E – patient describes skiing through trees cutting it too close and almost hitting the tree and felt searing pain in eye. Stopped in control sat down and called for help. Denies LOC.
Scenario 3-2 – neck laceration fall backwards into window

Patient sitting on deck, holding side of neck with moderate blood loss (250cc). Bleeding is slowed with patient’s hand but not controlled. Easily controlled with well-aimed direct pressure by OEC technician. Patient is mildly intoxicated but cooperative and apologetic for breaking the window.

Primary Assessment:
Airway & Breathing intact – pt. speaking clearly in complete sentences, Circulation – strong radial pulse – moderate active bleeding (not arterial) from neck Neurologic – A on AVPU but slurring words and repetitively apologetic. Fall from standing backwards into window possible MOI for spine injury

Secondary assessment: Physical exam:
5 inch laceration to side of neck with muscles and other vital structures visible. Moderate venous bleeding easily controlled with effective well aimed pressure or pressure dressing (not controlled without pressure). Otherwise physical exam is unremarkable

(3-2) VS:
P – 90 strong regular
RR – 16 even unlabored
BP – as taken
Skin – Pink warm and dry
Temp – normal
AVPU – A mentating well, slurred speech, smells of alcohol, slightly slow in answering questions. Concerned about damage to lodge window.

S – No complaints other than “I appear to have a flesh wound”
A – penicillin
M – none
P – daily multi vitamin
L – Patient’s actual INS& OUTs
E – patient describes standing up losing balance and falling into window.
Scenario 3-3 – neck swelling after collision in Terrain Park

Patient sitting up with skis removed sitting next to them holding throat. Patient in obvious respiratory distress with increased work of breathing. Patient is only able to speak one word per breath and is anxious and scared.

Primary Assessment: Airway & Breathing – airway swelling pt. speaking one word per breath with progressively worsening respiratory distress and work of breathing.
Circulation – strong radial pulse – no active bleeding.
Neurologic – A on AVPU, neck injury – possible MOI for spine injury (patient’s condition worsens dramatically if they are moved into a supine position – pt. struggles and states weakly “can’t breath”)

If rescuers place patient supine on backboard for transport the patient becomes unresponsive during transport and requires positive pressure ventilations for the remainder of their care

Secondary assessment: Physical exam: Throat swelling, abrasion with minor bleeding and bruising around the larynx. Otherwise physical exam is unremarkable

(3-3) VS:
P – 160 strong regular
RR – 34 rapid, shallow with obvious increased work of breathing
BP – add 20 to actual SBP
Skin – Cyanotic lips and fingers, pale face and hands, warm and dry
Temp – normal
AVPU – A mentating well, terrified
S – “Can’t breath”
A – none
M – None
P – none
L – Patient’s actual INS& OUTs
E – patient with limited ability to talk agrees with snowboarding friend who describes tangled rolling collision after landing while doing dual jump trick and snowboard struck patient in neck.
Scenario 3-4 – sucking chest wound broken ski pole to R chest

Patient is lying face down and responds to verbal greeting of ski patroller. Patient rolls over with obvious difficulty and is now looking up hill at patroller lying on their side. Blood is visible on their jacket and the snow. 1 broken ski pole sitting next to the patient with blood on the short basket end. Patient reports pulling the ski pole out of their chest after their fall.

Primary Assessment:   Airway & Breathing intact – pt. speaking clearly in complete sentences
                      Circulation – strong radial pulse – minimal active bleeding from chest wound under jacket
                      Neurologic – A on AVPU, slid into tree possible MOI for spine injury

Secondary assessment: Physical exam:   Tenderness to R chest wall with sucking chest wound just below nipple line. Audible sucking / gurgling sounds with patient’s respirations. Otherwise physical exam is unremarkable

(3-4) VS:
P – 1600 strong regular
RR – 32 even moderately labored and worsening
BP – subtract 20 points from actual SBP
Skin – pale, cool, moist
Temp – normal
AVPU – A mentating well, focused on worsening respiratory distress
S – lateral chest pain at site of penetration
A – Aspirin
M – None
P – none
L – Patient’s actual INS& OUTs
E – patient describes falling, tumbling, sliding into tree. After stopping they had severe pain in their R chest and looked down to see the ski pole impaled in their R chest. They pulled the broken pole out noting it was greater than 4” deep. They deny LOC
**Scenario 3-1 – stick impaled in eye**

Patient sitting on snow facing away from rescuer with goggles in place and pencil size stick impaled into eye. Small amount of blood from under goggles on patient’s cheek (less than ½ ounce)

Patient is awake and alert denies LOC reports they just missed hitting the tree but never saw the branch and now they have severe pain.

Primary Assessment:
Airway & Breathing intact – pt. speaking clearly in complete sentences
Circulation – strong radial pulse – no active bleeding from under goggles
Neurologic – A on AVPU, isolated eye injury no MOI for spine injury

Secondary assessment:
Physical exam difficult due to goggles. Patient reports no vision in injured eye when uninjured eye is closed. Otherwise physical exam is unremarkable

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