



**Fundamental Critical Care Support Skill Station  
Integrated Airway Management and Hypovolemic Shock Scenario  
Participant Guide**

**Estimated completion time: 30 minutes**

This skill station represents the practical application of the concepts presented in the textbook chapters, Basic Trauma and Burn Support, and Airway Management. The case scenario creates a framework for emphasizing the essential concepts in securing of the airway, assessment for burn and injury, and resuscitation from hypovolemic shock. The case presented here is intended to represent common problems encountered when caring for critically ill patients.

**Station Goals**

**The goals of this station are to:**

- Recognize the impending signs of shock.
- Demonstrate the general principles of shock management compounded with airway management.

**Participant Objectives**

**After completing this skill station, the student should be able to:**

- Discuss the goals of resuscitation in shock.
- List procedures for the management of hemorrhagic shock.
- Identify alternate solutions for the management of intubation of a difficult airway.

## Case Scenario

A 25-year-old man was working in his home laboratory. Neighbors called 911 after they heard a loud explosion and found the patient lying on his front lawn. When he arrives at the trauma center, the patient has burns over his face, arms, and legs and is complaining of severe, unremitting pain. He is disoriented. He has a single 18-gauge IV in the left antecubital fossa. He is restrained on a backboard and has a cervical collar in place. The patient's height is 5 feet, 10 inches and weight 220 lb (98 kg).

### Assessment and findings

The patient is stridorous and drooling. He has obvious carbon deposits on his face, and his eyebrows are singed. Breath sounds are diminished bilaterally. He has faint pulses in all extremities.

### **Vital signs**

- Blood pressure "cycling"
- Pulse 135 beats/min
- Respiratory rate 40-45 breaths/min
- Pulse oximetry probe is placed on index finger of left hand and saturation is not picking up

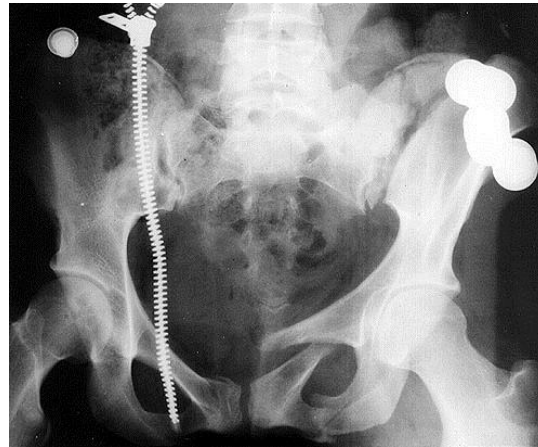
### After obtaining airway control:

### **Vital signs**

- Blood pressure 60/40 mm Hg
- Pulse 115 beats/min
- Respiratory rate 16 breaths/min
- O<sub>2</sub> saturation on pulse oximetry 100% on 100% fraction of inspired O<sub>2</sub>

Complete blood count and basic metabolic panel drawn and sent to lab

- Pelvic radiograph: open-book pelvic fracture
- Chest radiograph: normal with tracheostomy tube in good position
- FAST: positive in bladder view



## Detection

## Intervention

## Reassessment

## Intervention

**Following 2 units of packed red blood cells and 2 units of fresh frozen plasma:**

**Vital signs**

- Blood pressure 100/50 mm Hg
- Pulse 100 beats/min
- Respiratory rate 16 breaths/min
- O<sub>2</sub> saturation on pulse oximetry 100% on 100% fraction of inspired O<sub>2</sub>
- Head computed tomography (CT) scan: normal
- Chest CT scan: bilateral ground-glass opacities
- Abdomen/pelvis CT scan: open-book fracture with arterial extravasation from branches of the pudendal artery

**Lab studies**

- White blood cells 18 x 10<sup>9</sup>/L
- Hemoglobin 8 g/dL
- Platelets 113 x 10<sup>9</sup>/L
- Na 138 mmol/L
- K 3 mmol/L
- Cl 98 mmol/L
- HCO<sub>3</sub> 20 mmol/L
- Blood urea nitrogen 18 mg/dL
- Creatinine 1.1 mg/dL
- Coagulation measures normal
- Lactate 12 mg/dL

**Arterial blood gases (if ordered)**

- pH 7.25
- PCO<sub>2</sub> 35 mm Hg
- PO<sub>2</sub>, 90 mm Hg
- Base deficit -8 on 100% fraction of inspired O<sub>2</sub> intubated

**Reassessment**

**Intervention**

**Debriefing**

1. In the trauma setting, rapid airway intervention is mandatory because the remainder of the resuscitation/evaluation cannot proceed until the airway definitively secured. As such, there are very few instances where adjuncts (eg, fiberoptic intubation, nasotracheal intubation) are warranted. The hardest part of performing a cricothyrotomy is the decision to proceed with cricothyrotomy. The procedure itself is straightforward and quick.
2. Following inhalational injury, the oxygen saturation monitor readings will be falsely high due to carbon monoxide poisoning. Arterial blood gas measurement is needed to assess the saturation of hemoglobin with oxygen (SaO<sub>2</sub>).
3. An open-book pelvic fracture is associated with an extreme amount of bleeding. Blood-based resuscitation must be started immediately. Hemorrhage control is obtained by closing and stabilizing the pelvis (thereby minimizing venous bleeding) and embolization to arrest arterial hemorrhage. Pelvic packing can also help arrest venous bleeding.
4. Other injuries associated with this injury pattern (bladder, nerve, rectum) are beyond the confines of this course.