

# 2014 Northern Regional Mine Rescue Contest

## JUDGES' PACKET First Aid Competition



June 19, 2014  
Findley Lake, New York

**2014 Northern Mine Rescue Contest  
Findley Lake, NY**

**First Aid Station #1**

- A. One Person CPR**
- B. Artificial Respiration**
- C. Foreign Body Obstructed Airway –  
Unconscious Victim**

# **2014 Northern Mine Rescue Contest**

## **Findley Lake, NY**

### **First Aid Station #2 – Patient Assessment Scenario**

A laborer was unloading large equipment batteries utilizing a truck with a hydraulic lift gate. The lift gate failed and when it came down it landed on the laborer's right leg. Several batteries fell as well breaking open and spilling battery acid. His partner was able to lift the gate long enough for the victim to slide out from under it. Shortly after that the victim became unresponsive.

## Judges:

1. The patient will have an open fracture of the tibia on his right leg.
2. The patient also has first and second degree burns to his torso and left arm

## Treatment:

Someone will initially check to see if he's breathing. Should someone ask about his breathing, as they check his vitals, tell them that he is breathing. Likewise if they ask about his pulse, state it is rapid and weak.

The team will need to stop bleeding and splint the injury to the leg. Treatment of the burns consists of stopping the burning process and removing the irritant. Chemical burns require 20 minute water flush followed by a clean dry dressing. However the team will be limited to the materials that are readily available to them.

The team should then treat the patient for shock and prepare him for transport.

**FIRST AID  
FIELD  
PROBLEM**

# **Control Of Bleeding**

**TABLE 17.1 | Blood Volumes and Serious Blood Loss**

PATIENT	TOTAL BLOOD VOLUME	LETHAL BLOOD LOSS (RAPID)
Adult male (154 pounds)	6.6 liters	2.2 liters
Adolescent (105 pounds)	3.3 liters	1.3 liters
Child (early to late childhood: depends on size)	1.5 to 2.0 liters	0.5 to 0.7 liters
Infant (newborn, normal weight range)	300+ milliliters	30 to 50 milliliters

**capillary** ► the smallest of the body's blood vessels.

The oxygen and nutrients carried by arteries are passed off to the body's cells when the blood reaches a small system of vessels called **capillaries**. Capillaries act as an exchange point for nutrients and wastes. Some of our organs act as disposal and maintenance organs, such as the kidneys and liver, but the heart is the organ that works with the lungs to replenish oxygen. Once the blood has dropped off its supply of oxygen for the body's cells to use, it travels from the capillary system into the veins and back to the heart, through the lungs to pick up oxygen, and back to the heart again to be pumped through vessels to the body. By the time blood reaches the capillaries, pressure and speed are greatly reduced and the beating action of the heart no longer causes pulsations. The adequate supply of well-oxygenated blood to the vital organs and tissues is called *perfusion*. Good perfusion is essential to life.

## Bleeding

Understanding the circulatory system and how it functions will assist you in assessing and caring for patients with soft-tissue injuries. Keep the following general considerations in mind while you learn how to provide emergency care for patients with soft-tissue injuries:

### OBJECTIVE

2. Explain the importance of utilizing appropriate body substance isolation (BSI) precautions when caring for a patient with external bleeding.

**shock** ► the condition that results when there is an inadequate supply of well-oxygenated blood to all body systems.

- *Body substance isolation (BSI) precautions.* The risk of infectious disease should always be assessed and minimized when caring for bleeding patients. BSI precautions must be taken routinely to avoid direct contact with blood and other potentially infectious body fluids. Gloves should be worn during every patient encounter. Additional equipment (goggles, gown, mask) also should be used when there is an increased risk of contact with blood or other body fluids, such as in cases of childbirth or when a patient is spitting or vomiting blood.
- *Severity of blood loss.* The severity of blood loss should be based on the patient's signs and symptoms and an estimation of visible blood loss. If signs and symptoms of **shock** are present, bleeding should be considered serious. Shock will be discussed in more detail in Chapter 18.
- *Body's normal response to bleeding.* The body's automatic response to bleeding is blood vessel constriction and clotting. In cases of major bleeding, however, clotting may not occur because the flow of blood from the wound is too great to allow for the formation of a clot.

Uncontrolled bleeding always should be taken seriously. If not stopped, it will lead to shock and eventually death.

## External Bleeding

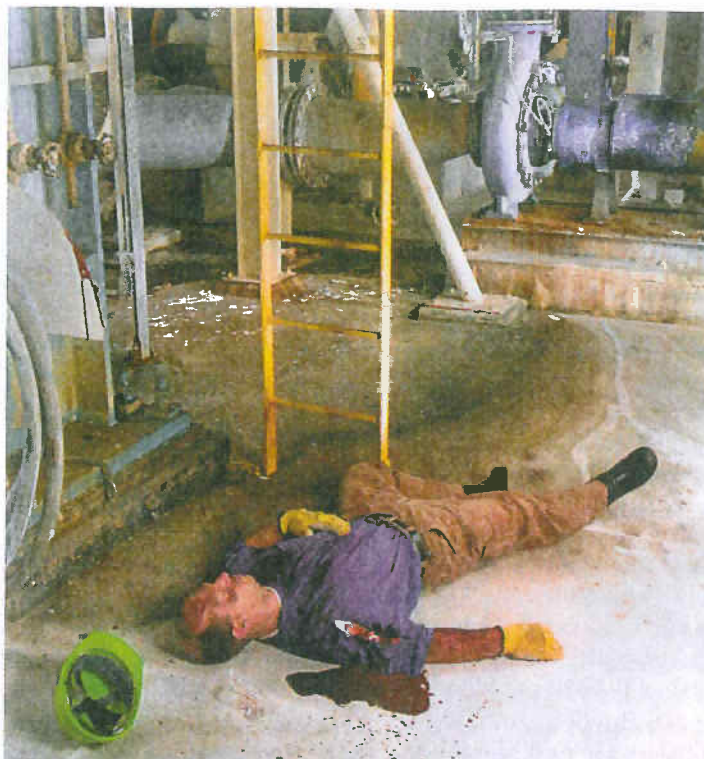
Bleeding can be classified as external or internal. The assessment and care of both kinds of bleeding are presented in this chapter. External bleeding may be classified as (Figure 17.3):

- *Arterial bleeding.* Arterial bleeding occurs when the arteries carrying blood away from the heart are damaged. The bleeding is often characterized by a spurting action with each beat of the heart. The color of arterial blood is bright red because it

### OBJECTIVE

4. Differentiate the characteristics of arterial, venous, and capillary bleeding.

**Figure 17.4** • External blood loss of about one-half liter (approximately one pint).



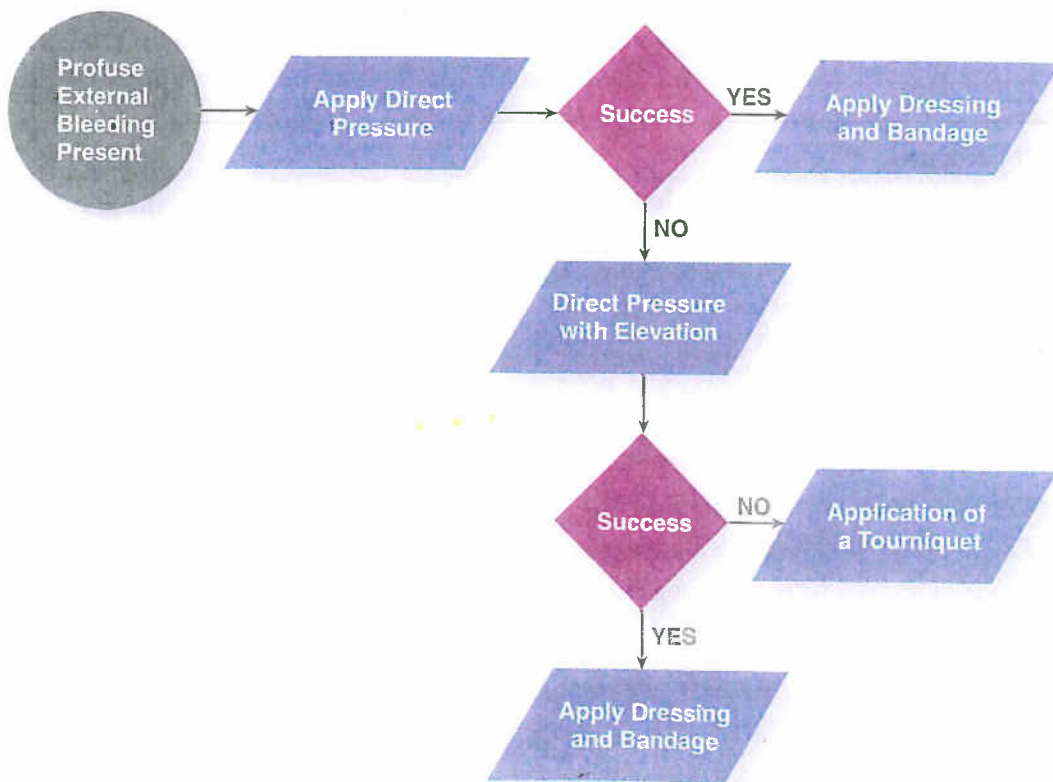
**OBJECTIVE**

5. Explain the proper care for a patient with active external bleeding.

**bandage** ► a device used to secure a dressing in place on the body, typically made of cloth or similar material.

### Controlling External Bleeding

There are three steps to controlling external bleeding (Figure 17.5 and Scan 17.1): direct pressure, including the use of a pressure **bandage**; elevation combined with direct pressure; and the tourniquet, which may be used when all other bleeding control steps have failed.



**Figure 17.5** • Algorithm for control of external bleeding.



**Figure 17.6** • In cases of profuse bleeding, use your gloved hand. Do not waste time hunting for a dressing.



### ▶ GERIATRIC FOCUS ◀

Often, the elderly are taking medications that contain “blood thinners” such as Coumadin. This prevents their blood from clotting. As a result, minor cuts may bleed profusely. Be prepared to aggressively treat any bleeding in the elderly with direct pressure and pressure bandages.

The application of a pressure bandage can be helpful during the early stages of attempting to control bleeding. To apply a pressure bandage, follow these steps:

1. Place several layers of clean dressings directly on the wound. Maintain pressure with your gloved hands.
2. Use a *roller bandage* or *cravat* (folded triangular bandages) to secure the dressings in place. It should be wrapped firmly over the dressing and above and below the wound.
3. Wrap the bandage to produce enough pressure to control the bleeding.
4. Check for a distal pulse to be certain that the pressure has not restricted circulation beyond the wound.



**Figure 17.7** • (A) To control bleeding, place several (a small stack) 4 × 4s on the wound and apply direct pressure. (B) If the wound bleeds through the dressings, apply several more 4 × 4s.