Chapter 23
Bleeding

Unit Summary

After students complete this chapter and the related course work, they will understand the structure and function of the circulatory system, the significance and characteristics of bleeding, the importance of personal protective equipment when treating a bleeding patient, the characteristics of external and internal bleeding, how to conduct a patient assessment, and methodologies for controlling bleeding.

National EMS Education Standard Competencies

Trauma

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Bleeding

Recognition and management of:

ÅBleeding (pp 781ï 796)

Pathophysiology, assessment, and management of:

ÅBleeding (pp 777ï 796)

Pathophysiology

Applies fundamental knowledge of the pathophysiology of respiration and perfusion to patient assessment and management.

Knowledge Objectives

1. Understand the general structure of the circulatory system and the function of its different parts, including the heart, arteries, veins, and interconnecting capillaries. (pp 777ï 780)
2. Explain the significant bleeding that may be caused by blunt force trauma, including the importance of perfusion. (pp 780ï 781)
3. Discuss bleeding and the possibility of hypovolemic shock, including the signs of shock. (pp 781ï 782)
4. Explain the importance of following standard precautions when treating patients with external bleeding. (p 781)
5. Describe the characteristics of external bleeding, including the identification of the following types of bleeding: arterial, venous, and capillary. (pp 782ï 783)
6. Identify the signs and symptoms of internal bleeding. (pp 783ï 784)
7. Explain how to determine the nature of the illness (NOI) for internal bleeding, including identifying possible traumatic and nontraumatic sources. (pp 783ï 784)
8. Explain how to conduct a primary assessment, including identification of life threats beyond bleeding, ensuring a patent airway, and making the transport decision. (pp 784ï 785)

9. Discuss internal bleeding in terms of the different mechanisms of injury and their associated internal bleeding sources. (p 786)
10. Explain how to conduct a secondary assessment on a patient with external or internal bleeding, including physical examination, vital signs, and use of monitoring devices. (pp 786ï 787)
11. Explain the emergency medical care of the patient with external bleeding. (pp 788ï 794)
12. Explain the emergency medical care of the patient with internal bleeding. (pp 794ï 796)

Skills Objectives

1. Demonstrate emergency medical care of the patient with external bleeding using direct pressure. (pp 788ï 789, Skill Drill 23-1)
2. Demonstrate emergency medical care of the patient with external bleeding using a commercial tourniquet. (pp 790ï 792, Skill Drill 23-2)
3. Demonstrate emergency medical care of the patient with epistaxis (nosebleed). (pp 793ï 794, Skill Drill 23-3)
4. Demonstrate emergency medical care of the patient who shows signs and symptoms of internal bleeding. (pp 794ï 796, Skill Drill 23-4)

Lecture

I. Introduction

A. After managing the airway, recognizing bleeding and understanding how it affects the body are perhaps the most important skills you will learn as an EMT.

B. Bleeding can be external and obvious or internal and hidden.

C. Either way, bleeding is potentially dangerous and can cause:

1. Weakness
2. Shock
3. Death

II. Anatomy and Physiology of the Cardiovascular System

A. Functions

1. The cardiovascular system circulates blood to all of the bodyôs cells and tissues.
   a. Cells in the brain, spinal cord, and heart cannot tolerate a lack of blood for more than a few minutes.
   b. Cells in other organs, such as the lungs and kidneys, can survive for almost an hour.
   c. Skeletal muscle cells may survive for 2 hours in a state of inadequate perfusion.
   d. Without an adequate supply of blood, cells begin to die, leading to permanent loss of function or death.
2. Delivers oxygen and nutrients
3. Carries away metabolic waste products

B. Components

1. Pump (heart)

2. Container (blood vessels)
3. Fluid (blood and bodily fluids)

C. Heart

1. The heart is a hollow muscular organ about the size of a clenched fist with its own regulatory system.
2. Involuntary muscle under the control of the autonomic nervous system
3. Needs a rich and well-distributed blood supply
4. Works as two paired pumps
   a. Upper chamber (atrium)
   b. Lower chamber (ventricle)
5. Blood leaves each chamber through a one-way valve.
6. The right side of the heart receives oxygen-poor blood from the veins.
7. The left side of the heart supplies oxygen-rich blood to the arteries (which carry it throughout the body).
   a. The left ventricle is responsible for providing 100% of the body with oxygen-rich blood.

D. Blood vessels

1. There are five types of blood vessels.
   a. Arteriesð small blood vessels that carry blood away from the heart
   b. Arteriolesð smaller vessels that connect the arteries and capillaries
   c. Capillariesð small tubes that link arterioles and venules
   d. Venulesð very small, thin-walled vessels that empty into the veins
   e. Veinsð blood vessels that carry blood from the tissues to the heart
2. As blood flows out of the heart, it passes into the aorta, the largest artery in the body.
3. Oxygen and nutrients easily pass from the capillaries into the cells, and waste and carbon dioxide diffuse from the cells into the capillaries.
   a. This transportation system allows the body to rid itself of waste products.
4. At the arterial ends of the capillaries and in the arteries themselves are circular muscular walls.
   a. These walls constrict and dilate automatically under the control of the autonomic nervous system.
   b. When these muscles open, blood passes into the capillaries in proximity to each cell of the surrounding tissue.
   c. When the muscles are closed, there is no capillary blood flow.
   d. In a healthy individual, all the vessels are never fully dilated or fully constricted at the same time.

E. Blood

1. Red blood cellsð responsible for the transportation of oxygen to the cells and for transporting carbon dioxide away from the cells to the lungs
2. White blood cells
3. Plateletsð responsible for forming blood clots
   a. A blood clot forms depending on one of the following principles:
      i. Blood stasis
      ii. Changes in the vessel walls
      iii. The bloodôs ability to clot
4. Plasma

F. Autonomic nervous system

1. Dynamic and constantly adapting to changing conditions in the body to maintain homeostasis and perfusion
    a. At times, the system fails to provide sufficient circulation for every body part to perform its function.
    b. This condition is called hypoperfusion, or shock.
2. Monitors the bodyôs needs from moment to moment
3. Adjusts blood flow by adjusting vascular tone
4. Automatically redirects blood away from other organs to the heart, brain, lungs, and kidneys in an emergency

III. Pathophysiology and Perfusion

A. Blunt force trauma can cause injury and significant bleeding that is unseen inside a body cavity or region.

B. Significant amounts of blood loss (even without visible bleeding) cause hypoperfusion.

1. In penetrating trauma, the patient may have only a small amount of bleeding that is visible.
2. However, the patient may have sustained injury to internal organs that will produce significant bleeding that is unseen by you and may cause death quickly.

C. Perfusion is the circulation of blood within an organ or tissue in adequate amounts to meet the cells' current needs for oxygen, nutrients, and waste removal.

1. Speed of blood flow
    a. Must be fast enough to maintain adequate circulation
    b. Must be slow enough to allow cells time to exchange oxygen and nutrients for carbon dioxide and other waste products
2. Some tissues need a constant supply of blood while others can survive with very little.

D. All organs and organ systems of the human body are dependent on adequate perfusion to function properly.

1. Death of an organ system can quickly lead to death of the person.
2. Emergency medical care is designed to support adequate perfusion until the patient arrives at the hospital.

E. The heart requires a constant supply of blood.

1. The brain and spinal cord may last 4 to 6 minutes without perfusion.
2. Kidneys may survive 45 minutes.
3. Skeletal muscles may last 2 hours.
4. The gastrointestinal tract can tolerate slightly longer periods of inadequate perfusion.
5. Times are based on a normal body temperature (98.6°F [37.0°C]).
    a. Colder temperatures will lengthen survival times.

IV. External Bleeding

A. Hemorrhage means bleeding.

1. External bleeding is visible hemorrhage.
2. Examples include nosebleeds and bleeding from open wounds.

B. The significance of external bleeding

1. With serious external bleeding, it may be difficult to tell the amount of blood loss.
    a. Blood will look different on different surfaces (eg, absorbed in clothing vs diluted in water).
    b. Always attempt to determine the amount of external blood loss.
    c. The presentation and assessment of the patient will direct the care and treatment.
2. The body will not tolerate an acute blood loss of greater than 20% of blood volume.
    a. The typical adult has approximately 70 mL of blood per kilogram of body weight.
    b. Significant changes in vital signs may occur if the typical adult loses more than 1 L (about 2 pints) of blood.
        i. Increase in heart rate
        ii. Increase in respiratory rate
        iii. Decrease in blood pressure
    c. Because infants and children have less blood volume to begin with, the same effect is seen with smaller amounts of blood loss.
3. How well people compensate for blood loss is related to how rapidly they bleed.
    a. An adult can comfortably donate 1 unit (500 mL) of blood over a period of 15 to 20 minutes.
    b. If a similar blood loss occurs in a much shorter period of time, the person may rapidly develop hypovolemic shock.
        i. Condition in which low blood volume results in inadequate perfusion and even death
    c. The age and preexisting health of the patient should be considered.
4. You should consider bleeding to be serious if the following conditions are present:
    a. Significant mechanism of injury (MOI)
    b. The patient has a poor general appearance and is calm.
    c. Signs and symptoms of shock
    d. Significant blood loss
    e. Rapid blood loss
    f. Uncontrollable bleeding
5. Blood loss is an extremely serious problem that demands immediate attention as soon as airway and breathing are addressed.

C. Characteristics of external bleeding

1. Injuries and some illnesses can disrupt blood vessels and cause bleeding.
2. Arterial bleeding
    a. Pressure causes blood to spurt and makes bleeding difficult to control.
    b. Typically brighter red (high in oxygen) and spurts in time with the pulse
    c. Decreases as the amount of blood circulating in the body drops and blood pressure drops
3. Venous bleeding
    a. Dark red (low in oxygen)
    b. Flows slowly or severely, depending on the size of the vein
    c. Does not spurt and is easier to manage
    d. Can be profuse and life threatening
    e. More likely to clot spontaneously than arterial blood
4. Capillary bleeding
    a. Bleeding from damaged capillary vessels
    b. Dark red
    c. Oozes from a wound steadily but slowly
    d. More likely to clot spontaneously than arterial blood

5. Clotting process
    a. Bleeding tends to stop rather quickly, within about 10 minutes, in response to internal mechanisms and exposure to air.
    b. When a person is cut, blood flows rapidly from the open vessel.
    c. The cut ends of the vessel begin to narrow (vasoconstriction), reducing the amount of bleeding.
    d. Then a clot forms (coagulation).
    e. Bleeding will never stop if a clot does not form, unless the injured vessel is completely cut off from the main blood supply.
    f. Despite the efficiency of this system, it may fail in certain situations.
        i. Movement
        ii. Medications
        iii. Removal of bandages
        iv. External environment
        v. Body temperature
        vi. Severe injury
6. Hemophilia
    a. The patient lacks one or more of the bloodôs clotting factors.
    b. Several forms
        i. Most are hereditary.
        ii. Some are severe.
    c. Bleeding may occur spontaneously.
    d. All injuries, no matter how trivial, are potentially serious.
    e. Patients should be transported immediately.

V. Internal Bleeding

A. Internal bleeding is any bleeding in a cavity or space inside the body.

B. Can be very serious, yet with no outward signs

1. Injury or damage to internal organs commonly results in extensive internal bleeding.
2. Can cause hypovolemic shock

C. Possible conditions causing internal bleeding include:

1. Stomach ulcer
2. Lacerated liver
3. Ruptured spleen
4. Broken bones, especially ribs or femur
5. Pelvic fracture

D. Mechanism of injury for internal bleeding

1. A high-energy MOI should increase your index of suspicion for the possibility of serious unseen injuries.
2. Internal bleeding is possible whenever the MOI suggests that severe forces affected the body.
    a. Blunt trauma
    b. Penetrating trauma
3. Use mnemonic DCAP-BTLS to assess for signs of injury.

a. **D**eformities
b. **C**ontusions
c. **A**brasions
d. **P**unctures/penetrations
e. **B**urns
f. **T**enderness
g. **L**acerations
h. **S**welling

E. Nature of illness for internal bleeding

1. Not always caused by trauma
2. Possible nontraumatic causes include:
   a. Bleeding ulcers
   b. Bleeding from the colon
   c. Ruptured ectopic pregnancy
   d. Aneurysms
3. These signs are frequent but not always present:
   a. Abdominal tenderness
   b. Guarding
   c. Rigidity
   d. Pain
   e. Distention
4. In older patients, signs include:
   a. Dizziness
   b. Faintness
   c. Weakness
5. Ulcers or other gastrointestinal problems may cause:
   a. Vomiting of blood
   b. Bloody diarrhea or urine
6. It is not as important for you to know the specific organ involved as it is to recognize that the patient is in shock and respond appropriately.

F. Signs and symptoms of internal bleeding

1. Pain (most common)
2. Swelling in the area of bleeding
3. Distention
4. Bruisingð a contusion, or ecchymosis (most common in head, extremity, pelvic, and abdominal injuries)
5. Dyspnea, tachycardia, and hypotension (chest trauma)
6. Hematomað a mass of blood in the soft tissues beneath the skin
7. Bleeding from any body opening
   a. Bright red bleeding from the mouth or rectum
   b. Hematuriað blood in the urine
   c. Nonmenstrual vaginal bleeding
8. Hematemesisð vomited blood

a. Bright red or dark red
b. Coffee-grounds appearance

9. Melenað black, foul-smelling, tarry stool with digested blood
10. Hemoptysisð bright red blood that is coughed up
11. Pain, tenderness, bruising, guarding, or swelling (possible closed fracture)
12. Broken ribs, bruises over the lower part of the chest, or a rigid, distended abdomen (possible lacerated spleen or liver)
13. Hypoperfusion
    a. Change in mental status, such as anxiety, restlessness, or combativeness (possible hypovolemic shock)
    b. Weakness, faintness, or dizziness on standing
    c. Changes in skin color or pallor (pale skin)
    d. Later signs of hypoperfusion suggesting internal bleeding include:
        i. Tachycardia
        ii. Weakness, fainting, or dizziness at rest
        iii. Thirst
        iv. Nausea and vomiting
        v. Cold, moist (clammy) skin
        vi. Shallow, rapid breathing
        vii. Dull eyes
        viii. Slightly dilated pupils that are slow to respond to light
        ix. Capillary refill of more than 2 seconds in infants and children
        x. Weak, rapid (thready) pulse
        xi. Decreasing blood pressure
        xii. Altered level of consciousness

VI. Patient Assessment for External and Internal Bleeding

A. Scene size-up

1. Scene safety
    a. Be alert to potential hazards.
    b. At vehicle crashes, ensure the absence of leaking fuel and energized electrical lines.
    c. In violent incidents, make sure the police are on the scene.
    d. Follow standard precautions.
2. Mechanism of injury/nature of illness
    a. Determine the MOI/NOI.
    b. Consider the need for spinal stabilization and additional resources.
    c. Consider environmental factors such as weather.

B. Primary assessment

1. Do not be distracted from identifying life threats.
2. Form a general impression.
    a. Note important indicators that alert you to the seriousness of the patientôs condition.
    b. Be aware of obvious signs of injury and distress (such as facial grimace).
    c. Determine the patientôs gender and age.
    d. Assess skin color.

e. Determine the level of consciousness using the AVPU scale.

3. Airway and breathing
   a. Consider the need for spinal stabilization.
   b. Ensure a patent airway.
   c. Look for adequate breathing.
   d. Check for breath sounds.
   e. Provide high-flow oxygen or assist ventilations with a bag-mask device or nonrebreathing mask.
4. Circulation
   a. Assess pulse rate and quality.
   b. Determine skin condition, color, and temperature.
   c. Check capillary refill time.
   d. Control external bleeding.
   e. Treat for shock.
      i. Apply oxygen.
      ii. Improve circulation.
      iii. Maintain a normal body temperature.
5. Transport decision
   a. Assessment of ABCs and life threats will determine the transport priority.
   b. Patients who may have significant bleeding will quickly become unstable.
   c. Signs that imply the need for rapid transport include:
      i. Tachycardia
      ii. Tachypnea
      iii. Low blood pressure
      iv. Weak pulse
      v. Clammy skin

C. History taking

1. Investigate the chief complaint.
   a. Look for signs or symptoms of other injuries due to the MOI and/or NOI.
   b. Severe bleeding
      i. You may have identified it in the primary assessment.
      ii. Begin treatment and rapid transport to the hospital.
   c. Note obvious signs of internal bleedingð look more carefully in this step.
   d. In a responsive trauma patient who has an isolated injury with a limited MOI, consider a focused assessment before assessing vital signs and obtaining a history.
   e. Assess the entire patient, looking for fractures and other problems.
   f. Determine if there are any preexisting illnesses.
2. SAMPLE history
   a. Ask the patient about blood-thinning medications.
   b. If the patient is unresponsive, obtain history information from medical alert tags or bystanders.
   c. Look for signs and symptoms of shock.
   d. Determine how much blood has been lost.

D. Secondary assessment

1. Record vital signs.
2. Complete a focused assessment of pain.

3. Attach appropriate monitoring devices.
4. With a critically injured patient or a short transport time, there may not be time to conduct a secondary assessment.
5. Physical examinations
   a. The examination should include a systematic full-body scan.
   b. Assess the respiratory system.
   c. Assess the airway for patency.
   d. Determine the rate and quality of respirations.
   e. In the neck, look for distended neck veins and a deviated trachea.
   f. In the chest, check for paradoxical movement of the chest wall and bilateral breath sounds.
   g. Assess the cardiovascular system, specifically the rate and quality of pulses.
   h. Assess the neurologic system to formulate baseline data to guide further decisions.
   i. Determine the level of consciousness.
   j. Examine pupil size and reactivity.
   k. Assess motor and sensory response.
   l. Assess the musculoskeletal system.
6. Assess all anatomic regions.
   a. Head
      i. Raccoon eyes
      ii. Battleôs sign
      iii. Drainage of blood or fluid from the ears or nose
   b. Abdomen
      i. Feel all four quadrants for tenderness or rigidity.
   c. Extremities
      i. Record pulse, motor, and sensory function.
7. Vital signs
   a. Assess baseline vital signs to observe the changes that may occur during treatment.
   b. A systolic blood pressure of less than 100 mm Hg with a weak, rapid pulse should suggest the presence of hypoperfusion.
   c. Cool, moist skin that is pale or gray is an important sign.
   d. Monitoring devices
      i. Quantify oxygenation and circulatory status.
      ii. Assess the patientôs blood pressure with a sphygmomanometer and stethoscope (manually) before using a noninvasive blood pressure monitor to establish a baseline blood pressure.
      iii. Use a pulse oximeter to evaluate the effectiveness of oxygenation.

E. Reassessment

1. Reassess the patient, especially in the areas that showed abnormal findings during the primary assessment.
   a. Signs and symptoms of internal bleeding are often slow to present.
   b. Children especially will compensate well for blood loss and then ñcrashò quickly.
2. Assess the effectiveness of any interventions and treatments provided to the patient.
3. Vital signs show how well your patient is doing internally (in severe cases, assess every 5 minutes).
   a. Is the patientôs airway still patent and breathing still adequate?
   b. Is the oxygen helping the patient to breathe easier?
   c. Is your treatment for shock resulting in better perfusion of the vital organs?

   d. Is the bandage controlling the bleeding?
4. Interventions
   a. Provide high-flow oxygen.
   b. Provide treatment for shock (if applicable) and transport rapidly.
   c. If internal bleeding is suspected, apply high-flow oxygen via a nonrebreathing mask and provide rapid transport.
   d. Do not delay transport of a patient to complete an assessment.
5. Communication and documentation
   a. Recognize, estimate, and report the amount of blood loss and how rapidly or over what period of time it occurred.
   b. Communicate all relevant information to the staff at the receiving hospital.
   c. With internal bleeding, describe the MOI/NOI and the signs and symptoms.
   d. Communicate your findings and any interventions used.
   e. Document all injuries, the care provided, and the patientôs response.

VII. Emergency Medical Care for External Bleeding

A. Follow standard precautions.

1. Wear gloves, eye protection, and possibly a mask or gown.
2. Make sure that the patient has an open airway and is breathing adequately.
3. Provide high-flow oxygen.

B. Several methods are available to control external bleeding.

1. Direct, even pressure and elevation
2. Pressure dressings and/or splints
3. Tourniquets
4. It will often be useful to combine these methods.

C. Direct pressure

1. Most effective way to control external bleeding
2. Pressure stops the flow of blood and permits normal coagulation to occur.
3. Apply pressure with your gloved fingertip or hand over the top of a sterile dressing.
4. For an object protruding from the wound, apply bulky dressings to stabilize the object in place, and apply pressure as best you can.
5. Never remove an impaled object from a wound.
6. Hold uninterrupted pressure for at least 5 minutes.
7. Follow steps in ***Skill Drill 23-1*** to control external bleeding with direct pressure.

D. Elevation

1. Elevate a bleeding extremity by as little as 6" while applying direct pressure.
2. Never elevate an open fracture to control bleeding.
   a. Fractures can be elevated after splinting.
   b. Splinting helps control bleeding.

E. Pressure dressing

1. Firmly wrap a sterile, self-adhering roller bandage around the entire wound.

2. Use 4" × 4" sterile gauze pads for small wounds and sterile universal dressings for larger wounds.
3. Cover the entire dressing above and below the wound.
4. Stretch the bandage tight enough to control bleeding.
5. You should still be able to palpate a distal pulse on the injured extremity after applying the dressing if you were able to before.
6. Do not remove a dressing until a physician has evaluated the patient.
   a. Apply additional manual pressure through the dressing.
   b. If necessary, add more dressings over the first.
   c. Secure dressings with a second, tighter roller bandage.
7. Bleeding will almost always stop when the pressure of the dressing exceeds arterial pressure.

F. Tourniquet

1. Apply above the level of the bleeding.
2. If a tourniquet is deemed necessary, it should be applied quickly and not released until a physician is present.
3. The tourniquet is useful if a patient has substantial bleeding from an extremity injury below the axilla or groin.
4. Follow the steps in ***Skill Drill 23-2*** to apply a commercial tourniquet.
5. Whenever you apply a tourniquet, make sure you observe the following precautions:
   a. Do not apply a tourniquet directly over any joint.
   b. Make sure the tourniquet is tightened securely.
   c. Never use wire, rope, a belt, or any other narrow material because it could cut into the skin.
   d. Use wide padding under the tourniquet if possible to protect the tissues and help with arterial compression.
   e. Never cover a tourniquet with a bandage.
   f. Do not loosen the tourniquet after you have applied it.

G. Splints

1. Air splints
   a. Can control internal or external bleeding associated with severe injuries
   b. Stabilize fractures
   c. Act like a pressure dressing applied to an entire extremity rather than to a small, local area
   d. Commonly referred to as soft splints or pressure splints
   e. Once the splint is applied, monitor circulation in the distal extremity.
   f. Use only approved, clean, or disposable valve stems when orally inflating air splints.
2. Rigid splints
   a. Can help stabilize fractures
   b. Reduce pain
   c. Prevent further damage to soft-tissue injuries
   d. Once the splint is applied, monitor circulation in the distal extremity.
3. Traction splints
   a. Designed to stabilize femur fractures
   b. When the EMT pulls traction to the ankle, countertraction is applied to the ischium and groin.
      i. Reduces the thigh muscle spasms
      ii. Prevents one end of the fracture from impacting or overriding the other
      iii. Pad these areas well to prevent applying excessive pressure to the soft tissue of the pelvis.

c. Once the splint is applied, monitor circulation in the distal extremity.

H. Bleeding from the nose, ears, and mouth

1. Several conditions can result in bleeding from the nose, ears, and/or mouth, including the following:
   a. Skull fracture
   b. Facial injuries, including those caused by a direct blow to the nose
   c. Sinusitis, infections, use and abuse of nose drops, dried or cracked nasal mucosa, or other abnormalities
   d. High blood pressure
   e. Coagulation disorders
   f. Digital trauma (nose picking)
2. Epistaxis (nosebleed)
   a. Common emergency
   b. Occasionally can cause enough blood loss to lead to shock
   c. The blood you see may be only a small part of the total blood loss.
      i. Much of the blood may pass down the throat into the stomach as the patient swallows.
      ii. A person who swallows a large amount of blood may become nauseated and start vomiting (may be confused with internal bleeding).
   d. Most nontraumatic nosebleeds occur from sites in the septum, the tissue dividing the nostrils.
   e. You can usually handle this type of bleeding effectively by pinching the nostrils together.
   f. Follow the steps in ***Skill Drill 23-3*** to control epistaxis.
3. Bleeding from the nose or ears following a head injury
   a. May indicate a skull fracture
   b. May be difficult to control
   c. Do not attempt to stop blood flow.
      i. Applying excessive pressure to the injury may force the blood leaking through the ear or nose to collect within the head.
      ii. This could increase the pressure on the brain and possibly cause permanent damage.
   d. If you suspect a skull fracture:
      i. Loosely cover the bleeding site with a sterile gauze pad to collect the blood and help keep contaminants away from the site.
      ii. Apply light compression by wrapping the dressing loosely around the head.
   e. A target or halo-shaped stain may occur on the dressing if blood or drainage contains cerebrospinal fluid.

VIII. Emergency Medical Care for Internal Bleeding

A. Controlling internal bleeding or bleeding from major organs usually requires surgery or other hospital procedures.

B. Keep the patient calm, reassured, and as still and quiet as possible.

C. If spinal injury is not suspected, place the patient in the shock position.

D. Provide high-flow oxygen.

E. Maintain body temperature.

F. Splint the injured extremity (usually with an air splint).

G. Never use a tourniquet to control the bleeding from closed, internal, soft-tissue injuries.

H. Follow the steps in Skill Drill 23-4 to care for patients with internal bleeding.

IX. Summary

A. Perfusion is the circulation of blood in adequate amounts to meet each cell's current needs for oxygen, nutrients, and waste removal.

B. The three arms of the perfusion triad must be functioning to meet this demand: a working pump (heart), a set of intact pipes (blood vessels), and proper fluid volume (enough oxygen-carrying blood).

C. Hypoperfusion, or shock, occurs when one or more of these three arms are not working properly and the cardiovascular system fails to provide adequate perfusion.

D. Both internal and external bleeding can cause shock. You must know how to recognize and control both.

E. The methods to control bleeding, in order, are:

1. Direct local pressure
2. Elevation
3. Pressure dressing
4. Tourniquet
5. Splinting device

F. Bleeding from the nose, ears, and/or mouth may result from a skull fracture. Other causes include high blood pressure and sinus infection. Evaluate the MOI and consider the more serious problem of skull fracture.

G. Bleeding around the face always presents a risk for airway obstruction or aspiration. Maintain a clear airway by positioning the patient appropriately and using suction when indicated.

H. If bleeding is present at the nose and a skull fracture is suspected, place a gauze pad loosely under the nose.

I. If bleeding from the nose is present and a skull fracture is not suspected, pinch both nostrils together for 15 minutes. If the patient is awake and has a patent airway, place a gauze pad inside the upper lip against the gum.

J. Any patient you suspect of having internal bleeding or significant external bleeding should be transported promptly.

K. If the MOI is significant, be alert to signs of unseen bleeding in the chest or abdomen; signs include serious bruising or symptoms such as complaints of difficulty breathing or abdominal pain.

L. Signs of serious internal bleeding include the following:

1. Vomiting blood (hematemesis)
2. Black tarry stools (melena)
3. Coughing up blood (hemoptysis)
4. Distended abdomen
5. Broken ribs

Post-Lecture

Unit Assessment

1. What are the three components that must be functioning correctly to maintain adequate blood flow?

2. List the five types of blood vessels.

3. What is the largest vessel that carries blood out of the heart?

4. What is the condition called when the cardiovascular system is unable to maintain adequate perfusion?

5. What are two signs of hypovolemic shock?

6. Describe the characteristics of bleeding from an artery.

7. What is the condition called when someone lacks clotting factors?

8. What signs and symptoms should make you suspect internal bleeding?

9. Describe the basic techniques of controlling bleeding.

10. List five of the conditions that can result in bleeding from the nose, ears, and/or mouth.

Knowledge Objectives

Knowledge Objectives