OBJECTIVES

27.1 Define key terms introduced in this chapter. Slides 17, 21, 28–30, 47, 49, 52–54

27.2 Describe the structure and function of the circulatory system, including the functions of the blood. Slides 12–16

27.3 Explain the concept of perfusion. Slide 17

continued
27.4 Compare and contrast arterial, venous, and capillary bleeding. Slide 21

27.5 Discuss causes and effects of severe external bleeding. Slides 20–21, 34–36

27.6 Discuss assessment and management of external bleeding, including methods of controlling external bleeding. Slides 23–31, 33–35

continued
OBJECTIVES

27.7 Identify patients at risk for internal bleeding. Slides 38–39

27.8 Recognize signs of internal bleeding and discuss patient care for internal bleeding. Slides 40–44

27.9 Discuss the causes of shock and its effects on the body. Slides 47–50

continued
OBJECTIVES

27.10 Explain the concepts of compensated, decompensated, and irreversible shock. Slide 49
27.11 Discuss the types of shock. Slides 51–54
27.12 Relate the signs and symptoms of shock to the body’s attempts to compensate for blood loss. Slide 55

continued
27.13 Discuss the management of patients in shock. Slides 56–59
MULTIMEDIA

Slide 45  Bleeding Control/Shock Management Video
Slide 60  Shock Video
CORE CONCEPTS

• How to recognize arterial, venous, and capillary bleeding
• How to evaluate the severity of external bleeding
• How to control external bleeding

continued
CORE CONCEPTS

- Signs, symptoms, and care of a patient with internal bleeding
- Signs, symptoms, and care of a patient with shock
Topics

• The Circulatory System
• Bleeding
• Shock
The Circulatory System
Arteries

• Carry oxygen-rich blood away from the heart
• Comprised of thick, muscular walls that enable dilation and constriction
Veins

• Carry oxygen-depleted blood rich in carbon dioxide back to the heart
• Contain one-way valves to prevent back flow of blood
Capillaries

- Microscopic blood vessels
- Vital exchange site: oxygen, nutrients passed through capillary walls in exchange for carbon dioxide from cells
Functions of Blood

• Transportation of gases
• Nutrition
• Excretion
• Protection
• Regulation
Adequate circulation of blood throughout body

Inadequate circulation of blood to tissues and organs

Hypoperfusion (Shock)
Bleeding
Types of Bleeding

- External
- Internal
External Bleeding

Spurting

- Spurting blood
- Pulsating flow
- Bright red color

Steady

- Steady, slow flow
- Dark red color

CAPILLARIES

- Slow, even flow
External Bleeding

**Arterial**
- Oxygen rich
- Rapid and profuse
- Spurting with heartbeat
- Most difficult to control

**Venous**
- Rich in carbon dioxide and waste
- Steady flow
- Easier to control
- Low pressure system

**Capillary**
- Slow and oozing
- Easily controlled
- Stops spontaneously
Think About It

• How severe is the bleeding? Is it exsanguinating hemorrhage? If so, how does that affect the priorities of treatment?
Patient Assessment

- Standard Precautions
- Monitor Respirations
- Open Airway
- Ventilate if Necessary
- Control Bleeding
  - Skin: Color, Temp, Condition, Check Pulses
Methods to Control External Bleeding

Direct Pressure

Elevate

Pressure Dressing

Tourniquet
Direct Pressure

- Apply firm pressure to wound with gloved hand and gauze bandage
- Hold pressure until bleeding is controlled
- If necessary, add dressings when lower ones are saturated
Direct Pressure

- Never remove bandages—even when bleeding is controlled
- When controlled, check for pulse distal to wound
Elevate

- Elevate injured extremity above level of the heart while applying direct pressure
- Do not elevate if musculoskeletal injury is suspected
Pressure Dressing

- Place several gauze pads on wound
- Hold dressings in place with self-adhering roller bandage wrapped tightly over dressings and above and below wound site
- Create enough pressure to control bleeding
Hemostatic Agents

- Commonly, dressing containing substance that absorbs and traps red blood cells
- Can be wadded up and inserted into wound
- May be a powder poured directly into the wound
- Manual pressure is always necessary
Tourniquet

• Use if bleeding is uncontrollable via direct pressure
• Use only on extremity injuries
Tourniquet

- Once applied, do not remove or loosen
- Attach notation to patient alerting other providers tourniquet has been applied
Think About It

• Is the current method of bleeding control working? Do you need to move on to a more aggressive step? How would you evaluate this?
Other Ways to Stop Bleeding

- Splinting
- Cold application
- Pneumatic anti-shock garment (PASG)
Special Bleeding Situations

- Head injury
  - From increased intracranial pressure, not direct trauma
  - Stopping bleeding only increases intracranial pressure
Special Bleeding Situations

- Nosebleed (Epistaxis)
  - Have patient sit and lean forward
  - Apply direct pressure to fleshy portion of nostrils
  - Keep patient calm and quiet

continued
Special Bleeding Situations

• Nosebleed (Epistaxis)
  – Do not let patient lean back
  – If patient becomes unconscious, place patient in recovery position and be prepared to suction
Internal Bleeding

- Damage to internal organs and large blood vessels can result in loss of a large quantity of blood in short time
- Blood loss commonly cannot be seen
- Severe blood loss can even result from injuries to extremities
Blunt Trauma

- Leading cause of internal bleeding
  - Falls
  - Motor vehicle crashes
  - Automobile–pedestrian collisions
  - Blast injuries
Penetrating Trauma

• Common penetrating injuries
  – Gunshot wounds
  – Stab wounds
  – Impaled objects
Signs of Internal Bleeding

- Injuries to surface of body
- Bruising, swelling, or pain over vital organs
- Painful, swollen, or deformed extremities
- Bleeding from mouth, rectum, or vagina

continued
Signs of Internal Bleeding

- Tender, rigid, or distended abdomen
- Vomiting coffee-ground or bright-red material
Pediatric Considerations

- Infants and children—efficient compensating mechanisms maintain blood pressure until half of volume is depleted
- Potential for shock must be recognized and treated before tell-tale signs appear
Cultural Considerations

- Places on body to look to assess circulation via skin color
  - Fingernails and lips
  - Conjunctiva in eyes
  - Palms of hands; soles of feet
Treatment of Internal Bleeding

- Administer Oxygen
- Maintain ABC's
- Control External Bleeding

Rapid Transport to Appropriate Medical Facility
Click [here](#) to view a video on the subject of controlling bleeding and shock management.
Shock
Shock

- Inability to supply cells with oxygen and nutrients
- Inadequate removal of waste products from cells
Causes of Shock

• Failure of any component of circulatory system
  – Heart: loses ability to pump
  – Blood vessels: dilate, making too large a “container” to fill
  – Blood: loses volume from bleeding
Severity of Shock

Compensated
Body shunts blood where needed

 Decompensated
Blood pressure falls as body can’t handle loss of volume

Irreversible
Cell damage occurring, causing rapid death
UNCONTROLLED SHOCK LEADS TO DEATH

Pulse increases to maintain cardiac output.

Blood vessels constrict, causing pale, clammy skin.

Decreasing blood pressure is a late sign of shock.

Blood is shunted away from the gastrointestinal organs, causing nausea.

Respiration rate increases.
Types of Shock

• Hypovolemic
• Cardiogenic
• Neurogenic
Hypovolemic Shock

- Results from a decreased volume of circulating blood and plasma
- Called hemorrhagic shock if caused by uncontrolled bleeding (internal or external)
- Can be caused by burns or crush injuries
Cardiogenic Shock

• Seen in patients suffering myocardial infarction
• Results from inadequate perfusion to heart, decreasing strength of contractions
• Heart’s electrical system may malfunction, causing heartbeat that is too slow, too fast, or irregular
Neurogenic Shock

- Results from inability to control dilation of blood vessels because of nerve paralysis
- No blood loss, but vessels dilated so much that blood volume can’t fill them
- Rarely seen in the field
Signs and Symptoms of Shock

- Altered mental status
- Pale, cool, clammy skin
- Nausea and vomiting
- Vital sign changes
Care for Shock

- Aggressive airway maintenance
- Administer high-concentration oxygen
- Attempt to stop cause of shock
- Apply and inflate PASG if approved

continued
Care for Shock

• Splint any suspected bone or joint injuries
• Prevent loss of body heat
• Deliver patient to appropriate medical facility within “golden hour”
• Speak calmly and reassure throughout assessment and care
PASG Application

Step 1

Step 2

Step 3
PASG Application

Step 4

Step 5

Step 6
Shock Video

Click [here](#) to view a video on the subject of shock.
Chapter Review
Chapter Review

• Almost all external bleeding can be controlled by direct pressure and elevation. If these don’t work, apply tourniquet if bleeding is on an extremity.

• Emergency care for internal bleeding is based on prevention and treatment of shock.
Chapter Review

• Early signs of shock: restlessness, anxiety, pale skin, rapid pulse and respirations.
• If shock is uncontrolled, patient’s blood pressure falls (late sign of shock).
• Signs and symptoms may not be evident early; treatment based on MOI may be life-saving.

continued
Chapter Review

• Treat shock by airway maintenance; administration of high-concentration oxygen; controlling bleeding; and keeping the patient warm. One of most important treatments is early recognition of shock and immediate transport.
Remember

- The circulatory system is designed to ensure adequate perfusion of body tissues.
- The classification of hemorrhage is directly related to the type of vessel ruptured and the pressure within that vessel.
Remember

• Treatment of external hemorrhage includes progression through the following steps: direct pressure, elevation, tourniquet application, use of hemostatic agents.

• Internal bleeding is impossible to evaluate. The most appropriate treatment must be rapid transport to an appropriate facility.

continued
Remember

• Shock develops if the heart fails, blood volume is lost, or blood vessels dilate, resulting in inadequate perfusion.

• Signs of shock reflect the body’s attempts at compensating for inadequate perfusion.

continued
Remember

• The most significant treatment for the shock patient is early recognition and prompt transport to a hospital where the patient will receive definitive care.
Questions to Consider

• What can I use for a tourniquet that will control bleeding but not damage tissue?
• When treating a patient with shock, what should I do at the scene and what should I do en route to the hospital?

continued
Questions to Consider

• Is a patient with pale, cool skin, tachycardia, and rapid, shallow respirations in shock or just under stress? How will continuing assessment help in making that decision?
Critical Thinking

- A patient has been involved in a motor-vehicle collision. There is considerable damage to the vehicle. The steering column and wheel are badly deformed. The patient complains of a “sore chest.” You note no external bleeding.
Critical Thinking

- The patient’s vital signs are pulse 116, respirations 20, blood pressure 106/70. How would you proceed to assess and care for this patient?
Please visit Resource Central on [www.bradybooks.com](http://www.bradybooks.com) to view additional resources for this text.