Unit Objectives

- Demonstrate the necessary skills to provide first aid treatment.
- Describe the basic principles of first aid.
- Demonstrate the procedure for treating external bleeding and the application of dressings and bandages.
- Demonstrate the procedure for treating shock.
- Demonstrate the procedure for treating muscle, bone, and joint injuries.
- Demonstrate the procedure for treating injuries that result from exposure to extreme heat and cold.
- Demonstrate the procedure for treating burns.
- Demonstrate the procedure for treating poisoning.
- Demonstrate the procedure for treating sudden illnesses including heart attack, stroke, fainting, convulsions, and diabetic reactions.
- Demonstrate the procedure for providing first aid care for injuries to the eyes, ears, head/skull, nose, chest, abdomen, and genital organs.
17:1 Providing First Aid

- Immediate care given to the victim of an accident or illness to minimize the effect of injury or illness until experts can take over
- Reasons for providing correct first aid
Basic Principles of Providing First Aid

• Remain calm and avoid panic
• Evaluate situation thoroughly
• Have a reason for anything you do
• Treatment you provide will vary depending on type of injury or illness, environment, others present, equipment or supplies on hand, and availability of medical help
First Steps

- Recognize that an emergency exists
- Use all senses to detect problems
- Sometimes signs of emergency are obvious and at other times they are less obvious
Next Steps

• Check the scene and make sure it is safe to approach
• What to observe
• If not safe, call for medical help
• If safe, approach the victim
• Call emergency medical services (EMS) as soon as possible
• If possible, obtain the victim’s permission before providing any care
• Triage if necessary
• Check for other injuries
• Obtain as much information as possible before you proceed
General Principles

• Obtain qualified help
• Avoid any unnecessary movement of the victim
• Reassure the victim
• Use a confident, calm attitude to help relieve victim’s anxiety
• Avoid giving the victim anything to eat or drink
• Protect the victim from cold or chilling, but avoid overheating
• Work quickly in an organized and efficient manner
• Do not make a diagnosis or discuss condition with observers at scene
• Maintain confidentiality and protect the victim’s right to privacy while providing treatment
• Make every attempt to avoid further injury or harm
• Provide only the treatment you are qualified to provide
17:3 Providing First Aid for Bleeding and Wounds

- Wound is an injury to soft tissues
  - Open: break in skin or mucous membranes
  - Closed: no break in skin or mucous membranes, but injury occurs to underlying tissues
- Wounds can result in bleeding, infection, and/or tetanus

First aid goals are controlling bleeding before it leads to death and to prevent or treat infection!!
Classifications of Open Wounds

Define the following classifications of open wounds:

• Abrasion: ______________________________________
• Incision: _______________________________________
• Laceration: _____________________________________
• Puncture: _______________________________________
• Avulsion: _______________________________________
• Amputation: _____________________________________
Controlling Bleeding

- First priority because victim can bleed to death quickly
- Bleeding can come from arteries, veins, or capillaries
  - Arterial bleeding:
  - Venous bleeding:
  - Capillary bleeding:
- Observe standard precautions
Controlling Bleeding

• 4 main methods for controlling bleeding and are listed in the order in which they should be used:
  ➢ Direct pressure: _____________________________________________________________
  ➢ Elevation: _________________________________________________________________
  ➢ Pressure bandages: _________________________________________________________
  ➢ Pressure on pressure points: ________________________________________________
Controlling Bleeding

After bleeding has been controlled, go for help

• Do not disturb clots
• Do not remove dressings
• Do not clean wound

These actions may result in more bleeding
Minor Wounds

• First priority—prevention of infection
• Wash your hands thoroughly before caring for wound
• Put on gloves
• Wash the wound with soap and water
• Rinse the wound
• Use sterile supplies
Signs of Infection

• Swelling
• Heat
• Redness
• Pain
• Fever
• Pus
• Red streaks

Prompt medical care needed if any of these symptoms occur
Tetanus (pg 501)

• Tetanus bacteria can easily enter an open wound
• Serious illness or death
• Get tetanus shot or booster as needed
Objects Embedded in Wound

- Examples such as splinters, pieces of glass, or small stones
- If superficial, gently remove
- Objects embedded in tissues should be left and removed by physician
Closed Wounds

Defined as those not involving breaks in the skin
• Can occur anywhere on body
• If bruise, apply cold application to reduce swelling
• Observe for signs of internal bleeding
• Get medical help
• Check breathing and treat for shock
• Avoid unnecessary movement
• No food or fluids
Closed Wounds

Signs and symptoms:
- Pain
- Tenderness
- Swelling
- Deformity
- Cold and clammy skin
- Rapid and weak pulse
- Drop in blood pressure
- Uncontrolled restlessness
- Excessive thirst
- Vomited blood
- Blood in urine or feces
17:4 Providing First Aid for Shock

- Also called hypoperfusion
- Shock: clinical set of signs and symptoms that are associated with an inadequate supply of blood to body organs, especially brain and heart
- If not treated, shock can lead to death
  - After 4-6 minutes, brain cells are damaged irreversibly
Causes of Shock

- Hemorrhage
- Excessive pain
- Infection
- Heart attack
- Stroke
- Poisoning by chemicals, drugs, or gases
- Lack of O2
- Psychological trauma
- Dehydration from burns, vomiting, or diarrhea

All types of shock impair circulation and decreases the supply of O2 to body cells, tissues, and organs.
Types of Shock

See Table 17-1 in text, pg 504

- Anaphylactic
- Cardiogenic
- Hemorrhagic
- Metabolic
- Neurogenic
- Psychogenic
- Respiratory
- Septic
Signs and Symptoms of Shock

- Skin is pale or bluish-gray and cool or cold to the touch
- Diaphoresis
- Rapid and weak pulse
- Respirations rapid, shallow, and may be irregular
- Blood pressure very low or unobtainable
- General weakness
- Anxiety and extreme restlessness
- Excessive thirst
- Nausea and/or vomiting
- Blurred vision or changes in appearance of eyes
Treatment for Shock

• Goals of treatment
  ➢ Eliminating the cause
  ➢ Improving circulation
  ➢ Providing oxygen
  ➢ Maintain body temperature

• Positioning of victim is based on their injuries

• Avoid food or drink

• Other principles of care
17:5 Providing First Aid for Poisoning

- Can happen to anyone
- Poison: any substance that causes a harmful reaction to the outside or inside of the body
- Immediate action is needed
- First aid varies depending on type of poison, injury involved, and the method of contact
- IF the poisoning victim is unconscious, check for breathing; start either rescue breathing or CPR
Ways Poisoning Occurs

- **Ingesting** various substances
- **Inhaling** poisonous gases
- **Injecting** substances
- **Contacting** the skin with poison
First Aid for Poisoning

Ingestion Poisoning

• Call poison control immediately
• Save label or container
• Calculate how much taken and at what time
• If victim vomits, keep sample of vomit
• If PCC tells you to induce vomiting, get the victim to vomit
• Make sure to read the CAUTION on pg 507
First Aid for Poisoning

**Inhalation Poisoning**
- Remove victim immediately from area if dangerous gases
- Commonly inhaled poison is carbon monoxide
- Before entering the danger area, take deep breath of fresh air and do not breathe the gases
- Check victim for breathing
- Start rescue breathing if needed
- Obtain medical help immediately
First Aid for Poisoning

Contact Poisoning
• Poisoning caused by chemicals or poisons coming in contact with victim’s skin
• Flush skin with large amounts of water for at least 15-20 minutes
• Remove any clothing or jewelry that contain the substance
• Call PCC
• Obtain medical help as soon as possible for burns or injuries
• Contact with poisonous plants can cause serious skin reactions; please read info on pg 507
First Aid for Poisoning

Injection Poisoning

• when an insect, spider, or snake bites or stings an individual
• If an arm or leg is affected, position the affected area below the level of the heart
• DHO8, pg 508, discusses insect sting, tick, and snakebite or spider bite
• For any type of injection poisoning, watch for allergic reactions with s/s of redness and swelling, itching, hives, pain, swelling of throat, difficult breathing, dizziness, and change of level of consciousness
17:6 Providing First Aid for Burns

- Injury caused by fire, heat, chemical agents, radiation, and/or electricity
- Classifications of burns
  - Superficial
  - Partial-thickness
  - Full-thickness
Treatment Objectives

- Remove source of heat
- Cool the skin
- Cover the burn
- Relieve pain
- Observe for and treat shock
- Prevent infections
Treatment

- Usually not required for superficial and mild partial-thickness burns
- All full-thickness burns require medical treatment
- Medical care should be obtained if more than 15% of the surface of an adult’s body is burned; 10% for a child
- Use Rule of Nines to calculate percentage of body surface burned (Figure 17-26, pg 512)
- Medical care should also be obtained if burns affect the face or respiratory tract, victim has difficulty breathing, burns cover more than one body part, victim has partial-thickness burn and is under the age of 5 or over the age of 60, or if the burns result from chemicals, explosions, or electricity.
Treatment

- Treatment for superficial and mild partial-thickness burns, pg 512
- Make sure to read the CAUTION, pg 512
- Treatment for severe partial-thickness and full-thickness burns
- Treatment for chemical burns

Dehydration can occur very quickly with severe burns, so shock is frequently noted in burn victims.
17:7 Providing First Aid for Heat Exposure

- Excessive exposure to heat or high external temperatures, leading to life-threatening emergencies
- Overexposure to heat may cause a chemical imbalance in the body
- Occurs when water and salt are lost through perspiration
- Also occurs when body cannot eliminate excess heat
Heat Cramps

- Muscle pains and spasms
- Caused by exposure to heat
- Loss of water and salt
- Apply firm pressure on cramped muscle to provide relief
- Provide rest and move to cooler area
- Small sips of water or electrolyte solution (e.g., sports drink)
Heat Exhaustion

- Occurs when exposed to heat with loss of fluids through sweating
- Signs and symptoms, pg 515
- First aid care, pg 515
Heat Stroke

• Prolonged exposure to higher than normal temperatures
• Medical emergency—needs immediate care and attention
• Body unable to eliminate excess heat; internal body temp rises to 105°F or higher
• Signs and symptoms, pg 516
• First aid care, pg 516
17:8 Providing First Aid for Cold Exposure

- Exposure to cold temperatures can cause body tissues to freeze and body processes to slow down.
- Needs immediate attention.
- Degree of injury affected by wind velocity, amount of humidity, and length of exposure to cold.
Hypothermia

- When body temperature is less than 95°F (35°C)
- Caused by prolonged exposure to cold
- Elderly the most susceptible
- Signs and symptoms, pg 517
- Death can occur if body processes become too slowed down
- First aid care, pg 517
  - Avoid warming the victim too quickly because rapid warming can cause dangerous heart arrhythmias
Frostbite

- Freezing of tissue fluids with damage to the skin and underlying tissues
- Caused by exposure to freezing or below-freezing temperatures
- Early signs and symptoms include redness and tingling
- Other signs and symptoms as frostbite progresses, pg 517
- Common sites: fingers, toes, ears, nose, cheeks
- First aid care, pg 518

- Because the victim does not feel pain, the body part must be warmed carefully, taking care not to burn the affected tissue; parts affected may be immersed in warm water, 100F-104F
- Read the CAUTION on pg 518
Providing First Aid for Bone and Joint Injuries

- Frequently occur during accidents or falls with variety of injuries
- Examples: fractures, dislocations, sprains, and strains
- May have more than one type of injury to bones and joints at the same time
Fracture

• Break in the bone
• Closed or simple fracture
• Compound or open fracture
• Signs and symptoms, pg 519
• Basic principles of treatment, pg 519
Dislocation

• When the end of the bone is displaced from a joint or moved out of its normal position within a joint

• Tearing or stretching of ligaments, muscles, and other soft tissues also frequently occurs

• Signs and symptoms, pg 520

• First aid care, pg 520
Sprain

- Injury to tissues surrounding a joint
- Usually occurs when the body part is forced beyond its normal ROM
- Ligaments, tendons, and other tissues are stretched or torn
- Common sites: ankles and wrists
- Signs and symptoms, pg 520
- Sprains frequently resemble fractures or dislocations—treat as fracture if any doubt
- First aid care, pg 520
Strain

- Overstretching of a muscle
- Caused by overexertion or by lifting
- Frequent site: back
- Signs and symptoms include sudden pain, swelling, or bruising
- First aid treatment, pg 520
Splints

• Devices to immobilize injured parts
• Types of splints
  ➢ Pneumatic/inflatable or air splints
  ➢ Padded boards
  ➢ Traction splints
• Splints can also be made from cardboard, newspapers, pillows, boards, etc.
Splints

Basic principles of splinting

- Need to be long enough to immobilize the joint above and below the injured area to prevent movement
- Should be padded
- Tied in place
- Apply as not to create pressure on affected area
- If open wound, control bleeding before applying splint
- Never attempt to reposition bone; don’t move victim
Circulation Check After Splint

• Verify that the splints are not too tight
• Check skin temperature (warm to the touch)
• Check color (pale or blue indicate poor circulation)
• Note swelling or edema
• Numbness or tingling
• Check pulse
• If circulation impaired, immediately loosen the ties
Slings

• Commercial slings have straps that extend around the neck and/or thoracic regions
• Triangular bandages are most common type
• Use: support arm, hand, forearm, and shoulder
• Used with casts or to provide immobility if fracture of arm or shoulder
Slings

**Basic principles of slings**

- Position arm that hand is higher than elbow; this will promote circulation, prevent swelling (edema), and decrease pain.
- Check circulation frequently, pg 522.
- If suspect fracture, move limb as little as possible.
- If triangular bandage is being used, make sure the knot tied at neck is not on bony prominence.
- If shoulder injury suspected, keep arm next to body.
Neck or Spine Injury

• **Most dangerous types** of injuries involving bones and joints

• **CAUTION:** Movement can result in permanent injury resulting in paralysis; Avoid any movement of victim if at all possible; Wait for backboard and adequate help to arrive for transfer
17:10 Providing First Aid for Specific Injuries

- Injuries to specific body parts require special care
- Examples: eyes, ears, nose, brain, chest, abdomen, and genital organs
Eye Injuries

• Always involves danger of vision loss
• Best to avoid giving major treatment
• Obtain help of a specialist
• Foreign objects in the eye
• Blows to the eye
• Penetrating injuries that cut eye tissue
• Pg 525
Ear Injuries

- Can result in rupture or perforation of eardrum
- Torn or detached tissue-wrap in moist gauze with cool sterile water and keep in plastic bag
- Keep victim lying flat, but raise head
- Clear fluid or blood-tinged fluid draining from ear and indicates skull or brain injury; allow the fluid to drain
Head or Skull Injuries

- Wounds and blows to head and skull can cause brain injury
- Seek medical help quickly as possible
- Signs and symptoms include clear or blood-tinged CSF from the nose or ears, loss of consciousness, headache, visual disturbances, unequal pupil size, muscle paralysis, speech disturbances, convulsions, and n/v

- First aid care, pg 526
  - Keep the victim flat and treat for shock, if necessary
  - Watch for respiratory distress and start rescue breathing if needed
  - Make NO attempt to stop the flow of fluid; loose dressings to absorb the flow
  - DO NOT give the victim any liquids; use damp cloth to moisten lips
  - If victim loses consciousness, note how long and report to rescue personnel
Nose Injuries

• Nosebleeds are usually more frightening than serious
• Nosebleeds also called epistaxis
• Can be caused by change in altitude, strenuous activity, high BP, and ruptured small blood vessels after a cold
• First aid care includes:
  ➢ Keep victim quiet and calm
  ➢ Place in sitting position, leaning slightly forward, and apply pressure to by pressing nostrils close to midline
  ➢ Can insert small piece of gauze in the nostril to absorb blood, but leave small piece extending out to remove packing later
  ➢ Apply cold compress to the bridge of the nose
• Repeated nose bleeds may indicate high BP or underlying condition
Chest Injuries

- Usually medical emergencies
- Involve heart, lungs, and major vessels
- Includes:
  - Sucking chest wound: __________________________________________
  - Penetrating injuries to the chest: ________________________________
  - Crushing injuries to the chest: ________________________________

Pg, 527
Abdominal Injuries

- Can cause damage to internal organs and bleeding in major blood vessels
- Intestines and other abdominal organs may protrude from open wound
- Medical emergency as bleeding, shock, and damage to organs can be fatal
- Signs and symptoms include severe abdominal pain or tenderness, protruding organs, open wounds, n/v (particularly blood), abdominal muscle rigidity, and symptoms of shock
- First aid care:
  - Position victim flat on back and place pillow/blanket under knees to bend knees slightly; can elevate head slightly to aid breathing
  - Remove clothing from wounds or protruding organs; use sterile water/saline or warm tap water to moisten dressing and cover the area. Then cover with plastic wrap to keep moist and cover that with aluminum foil or towel to keep warm
  - Give NO food or fluids to victim; use damp cloth to moisten lips
Injuries to Genital Organs

- Result of falls, blows, or explosions
- Can cause severe pain, bleeding, and shock
- First aid care includes:
  - Control severe bleeding by using sterile (or clean) dressing to apply direct pressure
  - Treat victim for shock
  - Keep any torn tissue and wrap in moist gauze, putting it in plastic bag
  - Use ice pack or other cold applications to decrease bleeding and pain
Providing First Aid for Sudden Illness

- Can be difficult to determine exact illness being experienced
- Base care on signs and symptoms
- Information from victim if possible and look for medical alert bracelets or necklaces or medical cards
- Sudden illnesses to consider:
  - Heart attack
  - Stroke
  - Fainting
  - Convulsion
  - Diabetic reactions
Heart Attack

• Known by other names as coronary thrombosis, coronary occlusion, or myocardial infarction

• Occurs when there is blockage in one or more coronary arteries

• If heart stops, start CPR

• Signs and symptoms, pg 531

• In women, s/s more subtle; usually fatigue and sleep disturbances for weeks prior to attack, cold sweat, and pain in other areas besides the chest such as arms, back, stomach, neck, and/or jaw. Heart attacks often misdiagnosed in women

• First aid care, pg 532
Cerebrovascular Accident

- Also called stroke, apoplexy, or cerebral thrombosis
- Caused by clot in cerebral artery or hemorrhage from blood vessel in the brain
- Signs and symptoms vary depending on the part of the brain affected. Can include numbness, paralysis, unequal pupils, mental confusion, sudden severe headache, loss of balance or coordination, slurred speech, n/v, difficulty breathing and swallowing, and loss of consciousness
- First aid care includes FAST
  F=face; ask them to smile
  A=arms; ask them to raise arms
  S=speech; ask them to speak
  T=time; have any of these symptoms, call 911 immediately
Cerebrovascular Accident

- Important to know exactly when symptoms started and to obtain medical help
- Immediate care during the first 3 hours can help prevent brain damage
- If CVA caused by clot, treatment with thrombolytic or clot busting drug (TPA) or angioplasty can dissolve the clot and restore blood flow
- If CVA caused by hemorrhage, treatment will depend on the cause of the bleed (hypertension, anticoagulants, trauma, ect) and in some cases, surgery to stop the bleeding
Fainting

• Temporary reduction in supply of blood to brain which may result in partial or complete loss of consciousness

• Early signs include dizziness, extreme pallor, diaphoresis, coldness of skin, nausea, and numbness and tingling of the hands and feet

• If early symptoms are noted, help the victim lie down or to sit in a chair and position head at level of the knees

• If victim loses consciousness, try to prevent injury

• Obtain medical help if recovery not prompt, there are other injuries, or fainting reoccurs
Convulsion

- Type of seizure—strong involuntary contraction of muscles
- Can happen in conjunction with high body temperatures, head injuries, brain disease, and brain disorders such as epilepsy
- Cause rigidity of the muscles followed by jerking movements
- During convulsion, person may stop breathing, bite their tongue, lose bladder and bowel control, and injure body parts. Face and lips may be cyanotic and they may loose consciousness.
- First aid care is directed at preventing self-injury, pg 533
Diabetes Reactions

- Metabolic disorder caused by lack of or insufficient production of insulin (hormone produced by pancreas that helps the body transport glucose from the bloodstream to the body cells where glucose is used to produce energy)
- When the body lacks insulin, glucose builds up in the bloodstream
- Insulin injections can reduce and control glucose levels in blood

Two diabetic conditions
1) Diabetic coma
2) Insulin shock

See figure 17-42, pg 534
Diabetic coma

- Aka hyperglycemia
- Caused by increased level of glucose in the bloodstream (and low insulin levels in the bloodstream)
- Results from excess intake of sugar, failure to take insulin, or insufficient production of insulin
- S/S include confusion, weakness or dizziness, n/v, rapid, deep respirations, dry, flushed skin, and sweet or fruity odor to breath
- Victim will eventually lose consciousness and die
Insulin shock

- Aka hypoglycemia

- Caused by excess amount of insulin in the bloodstream (and low glucose levels in the bloodstream)

- Results from failure to eat recommended amount, vomiting after taking insulin, or taking excessive amounts of insulin

- S/S include muscle weakness, mental confusion, restlessness or anxiety, diaphoresis, pale, moist skin, hunger pangs, and/or palpitations

- Victim may lapse into coma and develop convulsions

- Treatment, pg 533
Diabetic reactions

• By observing symptoms and obtaining information from the victim, you can usually determine if its coma vs shock

• But, if the patient is unconscious and you cannot determine which event, it is recommended that you put sugar under the victim’s tongue and call 911; this is the lesser of two evils!

• If patient is in diabetic coma, the blood sugar can be lowered medically once patient is transported for care

• If the patient is in insulin shock, brain damage can occur if the blood levels are not raised immediately; medical care cannot correct brain damage
Applying Dressings and Bandages

• Dressings is a sterile covering placed over a wound or injured part, and used to control bleeding, absorb blood and secretions, prevent infection, and ease pain.

• Materials used in dressings are gauze pads of varying sizes and compresses of thick, absorbent material (NO FLUFF COTTON).

• Dressings can be held in place with tape or a bandage.

• Bandages used to hold dressings in place, to secure splints, and to support and protect body parts; bandages should be applied snugly but not so tightly as to interfere with circulation.

• Types of bandages consist of:
  ➢ Roller gauze
  ➢ Triangular
  ➢ Elastic
Methods to Wrap Bandages

• Depends on the body part to be wrapped
  ➢ Spiral
  ➢ Figure-eight for joints
  ➢ Recurrent or finger wrap

Read procedure  17:12
Checkpoints for Circulation

• Check circulation after bandage has been applied
• Signs of poor or impaired circulation:
  ➢ Swelling or edema
  ➢ Pale or cyanotic color
  ➢ Coldness to touch
  ➢ Numbness or tingling
  ➢ Poor or slow capillary refill
• Loosen bandage immediately
Summary

• Proper first aid can save a life
• Provide only care you are qualified to provide
• Always reassure victim and avoid unnecessary stress and movement
• Obtain medical help as needed