



# FIRST AID

DHO 7  
Chapter 16

# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

- First aid is immediate care given to the victim of an accident or illness to minimize the effect of injury or illness until experts can take over
- It is not full and complete treatment
- Correct first aid can be difference between life & death



# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

- Remain calm & 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, & availability of medical help



# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

- First step is to recognize that an emergency exists
- Use all senses to detect problems
  - Listen for unusual sounds
  - Look for unusual sights
- Sometimes signs of emergency are obvious (car accident) & at other times they are less obvious (empty pill bottle and drowsy infant)



# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

- Check the scene and make sure it is safe to approach
- If not safe, call for medical help
  - Do not endanger your own life or lives of bystanders
- If safe, approach the victim & determine consciousness
- Never move an injured victim unless they are in a dangerous area



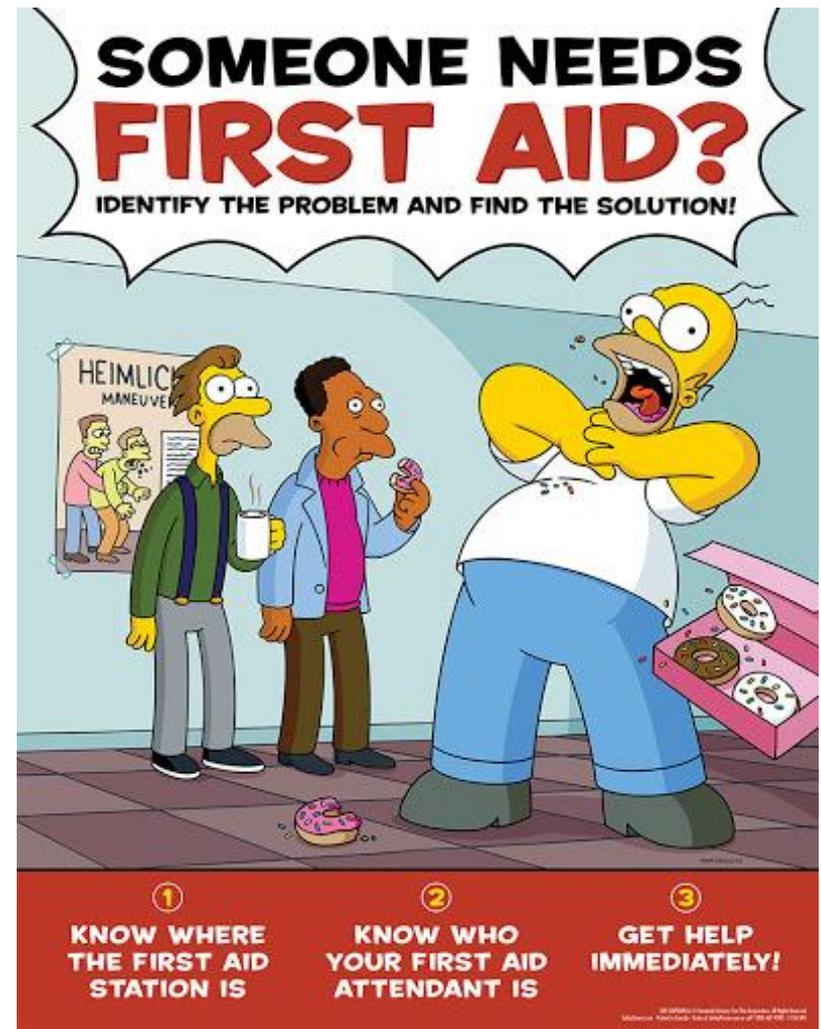
# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID



- Call for EMS ASAP-time is critical
- If possible, obtain the victim's permission before providing any care (parent's permission for minors)
- If victim is unconscious & no relative is available to give permission, assume you have permission to treat
- If victim refuses to give consent for care, don't proceed; call EMS & allow professionals to take over
- Triage if necessary (multiple victims)
- Treat life-threatening emergencies first (no breathing, no pulse, severe bleeding, etc.)
- Assess for other injuries

# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

- 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



# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID



- Do not make a diagnosis or discuss condition with observers at scene
- Maintain confidentiality & 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

# 16:1 PROVIDING FIRST AID: BASIC PRINCIPLES OF FIRST AID

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



➤ **First Aid: Awareness & Basic Principles**

# 16:3 BLEEDING AND WOUNDS



- **Wound**: injury to soft tissues; classified as open or closed
- **Open**: break in skin or mucous membranes
- **Closed**: no break in skin or mucous membranes, but injury occurs to underlying tissues (bruise or hematoma)
- Wounds can result in bleeding, infection, and/or tetanus
- First aid is directed toward controlling bleeding before it leads to death & preventing/obtaining treatment for infection

# 16:3 BLEEDING AND WOUNDS: TYPES OF OPEN WOUNDS

- **Abrasion**-skin scraped off; bleeding limited; important to prevent infection because dirt & contaminants often enter the wound
- **Incision**-cut with sharp object (knife, scissors, razor); edges are smooth & regular; if cut is deep bleeding can be heavy



# 16:3 BLEEDING AND WOUNDS: TYPES OF OPEN WOUNDS

- **Laceration**-tearing by excessive force; wound has jagged, irregular edges



- **Puncture**-caused by sharp object such as pin, nail, gunshot; external bleeding is usually limited but internal bleeding can occur; infection chance is increased & tetanus is possible



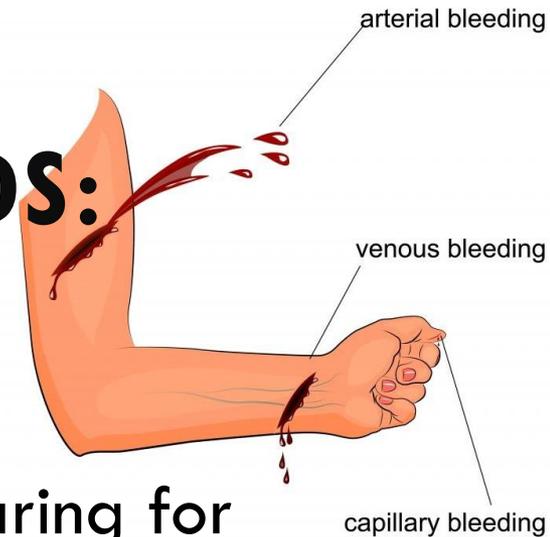
# 16:3 BLEEDING AND WOUNDS: TYPES OF OPEN WOUNDS

- **Avulsion**-tissue torn or separated from victim's body; can result in a piece of torn tissue hanging from ear, nose, hand, etc.; bleeding is heavy; preserve body part so surgeon can reattach it

- **Amputation**-body part cut off & separated from body; bleeding can be heavy; preserve body part so surgeon can reattach it; wrap part in cool, moist drsg & place in plastic bag which should be kept cool or placed in ice water; never place part directly on ice



# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING



- Controlling bleeding is first priority in caring for wounds, because victim can bleed to death quickly
- Bleeding can come from arteries, veins, & capillaries
  1. **Arterial blood**-spurts from a wound, results in heavy blood loss, & is bright red; life-threatening & must be controlled quickly
  2. **Venous blood**-slower, steadier, & dark or maroon; blood loss is constant & can lead to large blood loss but is easier to control
  3. **Capillary blood**-oozes from wound slowly, less red than arterial & clots easily

# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING

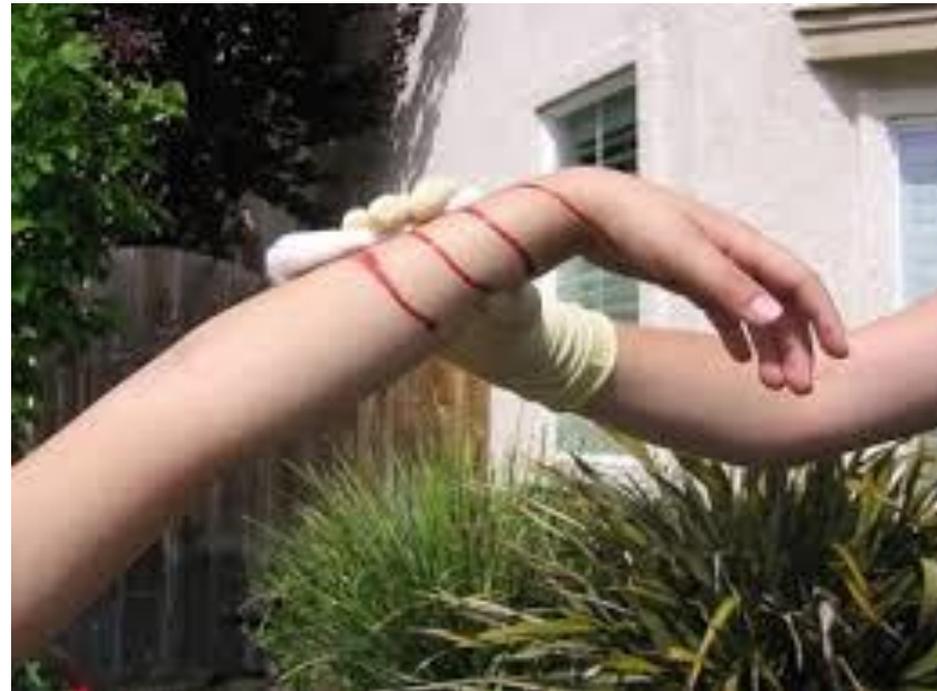
- 4 methods for controlling bleeding listed in order in which they should be used: direct pressure, elevation, pressure bandage, pressure points

1. **Direct pressure**-use drsg, sterile gauze, or clean cloth apply pressure over wound for 5-10 min or until bleeding stops; if blood soaks through drsg apply 2nd drsg over 1<sup>st</sup> & continue applying pressure



# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING

- 2. Elevation**-raise injured part above level of victim's heart to allow gravity to aid in stopping blood flow; continue applying direct pressure while elevating (if fracture is suspected the part should not be elevated)



# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING

3. Pressure bandages-apply pressure bandage to hold the drsg in place; maintain direct pressure & elevation while applying it



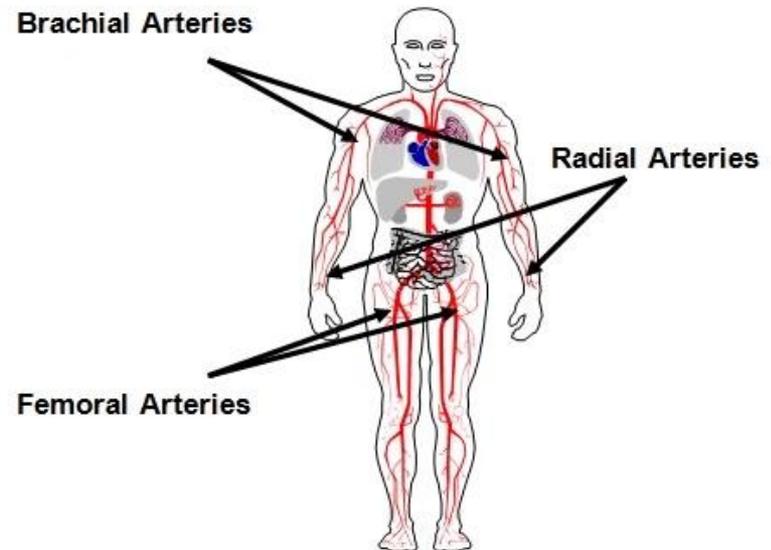
# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING

4. Pressure points-apply pressure to a main artery by pressing it against an underlying bone which stops circulation; should not be used any longer than necessary; continue using direct pressure & elevation

Main pressure point for the arm is the **brachial artery** located on inside of arm  $\frac{1}{2}$  between armpit & elbow

Main pressure point for the leg is the **femoral artery** located at the groin

Pressure Points of the Body



# 16:3 BLEEDING AND WOUNDS: CONTROLLING BLEEDING

- After bleeding has been controlled, go for help
- Do not disturb clots
- Do not remove dressings
- Do not clean wound
- Any of those actions may result in more bleeding

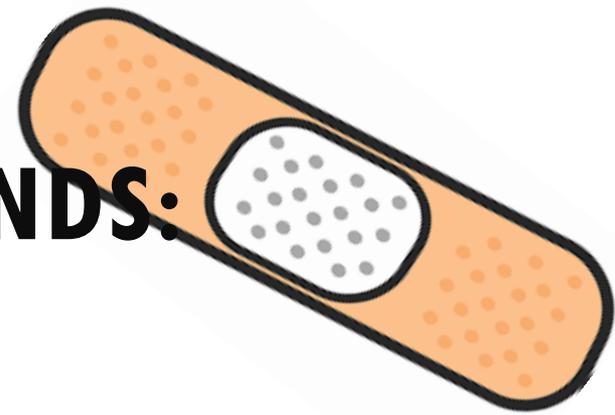


# 16:3 BLEEDING AND WOUNDS: MINOR WOUNDS

- In treating wounds that do not involve bleeding, prevention of infection is the 1<sup>st</sup> priority
- Wash your hands thoroughly before caring for wound
- Put on gloves
- Wash the wound with soap & water
- Use sterile supplies



# 16:3 BLEEDING AND WOUNDS: MINOR WOUNDS



- Watch for signs & symptoms of infection: swelling, heat, redness, pain, fever, pus, red streaks
- Tetanus bacteria can easily enter an open wound (especially puncture wound) and lead to serious illness & death
- Get tetanus shot or booster as needed
- If objects such as splinters, pieces of glass, or small stones are at the surface remove them with sterile tweezers
- Any objects embedded in tissues should be left and removed by physician

# 16:3 BLEEDING AND WOUNDS: CLOSED WOUNDS

- Closed wound=no break in the skin
- For bruises apply cold application to reduce swelling
- Observe for signs of internal bleeding (pain, tenderness, swelling, deformity, cold/clammy skin, rapid/weak pulse, dec BP, uncontrolled restlessness, excessive thirst, hematemesis, hematuria)
- Check breathing & treat for shock
- Avoid unnecessary movement
- No food or fluids



# 16:3 BLEEDING AND WOUNDS

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



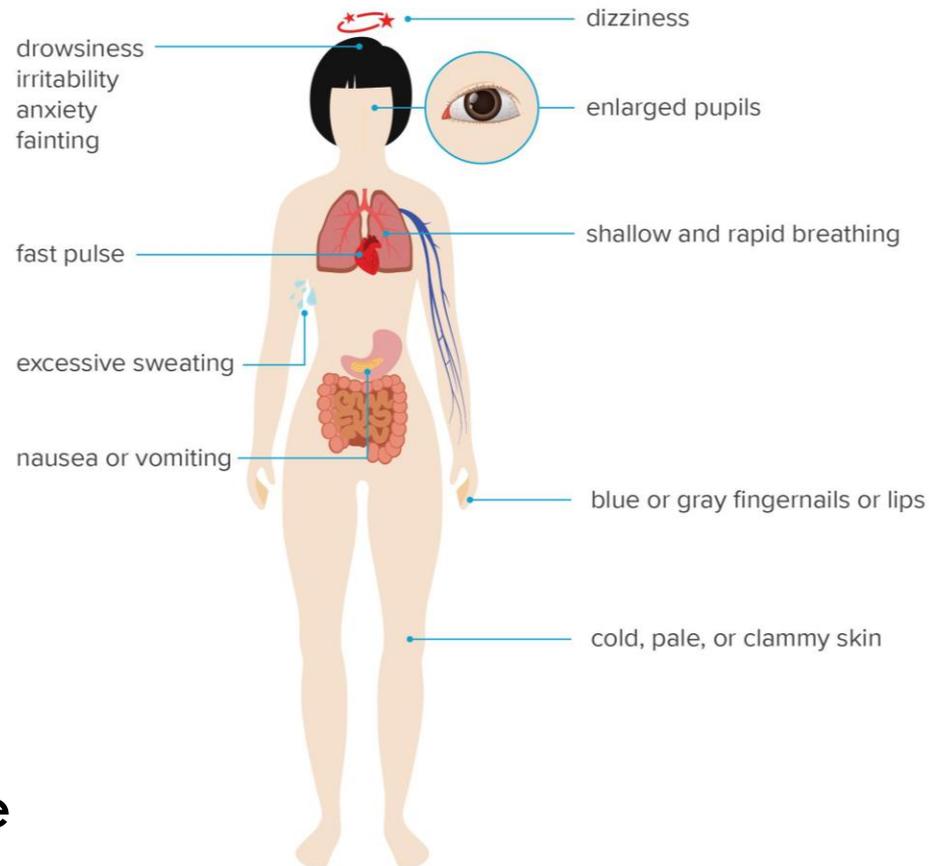
- **Arterial Bleeding – Workplace**
- **Capillary Bleeding – Workplace**
- **Venous Bleeding – Workplace**
- **How to Stop the Bleed**
- **First Aid for Splints & Bleeding Wounds:  
How to Apply a Pressure Bandage**

# 16:4 SHOCK

- AKA hypoperfusion
- **Shock**-set of signs & 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 even when victim's injuries might not themselves be fatal
- After 4-6 minutes, brain cells are damaged irreversibly

MEDICALNEWS TODAY

## Effects on the Body Shock



# 16:4 SHOCK

- Many different things can cause victims to experience shock: hemorrhage (excessive loss of blood), excessive pain, infection, heart attack, stroke, poisoning, lack of oxygen, psychological trauma, dehydration
- All types of shock impair circulation and decrease the supply of oxygen to body cell, tissues, and organs



# 16:4 SHOCK



- When shock occurs, body attempts to inc blood flow to brain, heart, & vital organs by dec blood flow to other body parts.

This can lead to these signs & symptoms:

- ✓ Pale or cyanotic skin, nail beds, or mucous membranes
- ✓ Skin cool to touch
- ✓ Diaphoresis (excessive sweating)
- ✓ Rapid and weak pulse (check carotid)
- ✓ Respirations rapid, shallow, and may be irregular
- ✓ Blood pressure very low or unobtainable
- ✓ General weakness, eventually loses consciousness
- ✓ Anxiety and extreme restlessness
- ✓ Excessive thirst, nausea and/or vomiting
- ✓ Blurred vision, eyes may appear sunken & have vacant expression
- ✓ Dilated pupils

# 16:4 SHOCK



- Cover victim with blankets but avoid overheating
- Avoid food or drink
- Goals of treatment
  - ✓ Eliminating the cause by controlling bleeding, providing oxygen, ease pain, provide emotional support
  - ✓ Improving circulation especially to brain & heart
  - ✓ Providing oxygen
  - ✓ Maintain body temperature

# 16:4 SHOCK

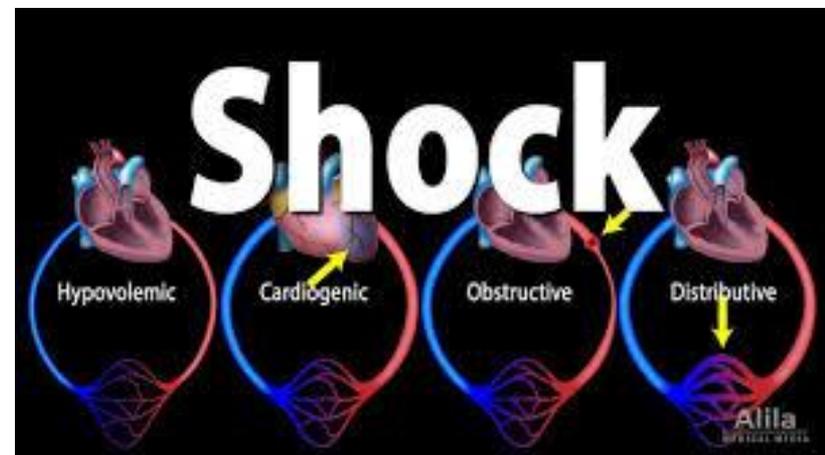
Position for treating shock is based on victim's injuries:

- Raise feet & legs about 12" to allow blood flow to heart/brain
- If victim vomiting or has bleeding & injuries of the jaw/mouth position them on side to prevent choking
- If victim is having breathing problems raise head & shoulders
- If victim has head (not neck) injury & dyspnea position them lying flat with head slightly raised
- If neck or spine injuries don't move victim unless in a dangerous situation



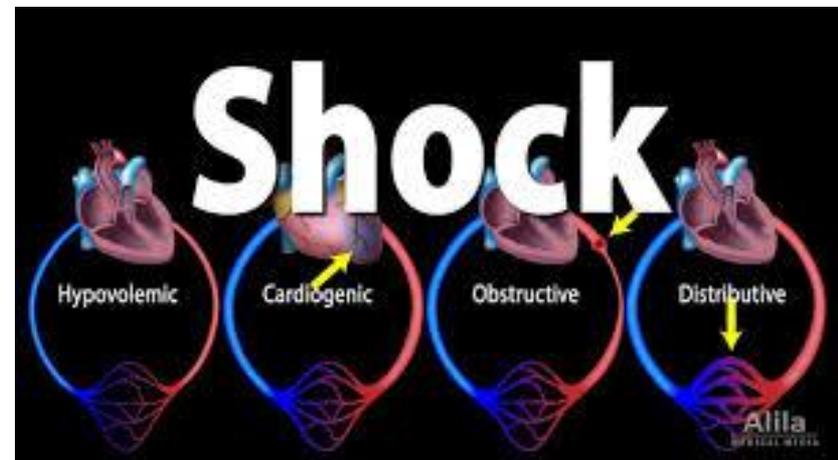
# 16:4 SHOCK

8 Main types of Shock:



1. **Anaphylactic**-hypersensitive or allergic reaction causes vasodilation and BP drops
2. **Cardiogenic**-damage to heart muscle from heart attack or cardiac arrest causes heart to not be able to pump blood effectively
3. **Hemorrhagic**-severe bleeding leads to dec in blood volume & BP drops
4. **Metabolic**-loss of body fluid from severe vomiting, diarrhea, or heat illness; disruption of acid-base balance in diabetes

# 16:4 SHOCK



8 Main types of Shock:

5. **Neurogenic**-injury & trauma to brain and/or spinal cord causes vasodilation & BP drops
6. **Psychogenic**-emotional distress such as anger, fear, or grief causes vasodilation and blood pools in areas away from brain
7. **Respiratory**-trauma to resp tract, resp distress or arrest (chronic disease or choking)
8. **Septic**-acute infection (toxic shock syndrome) causes vasodilation & BP drops

# 16:4 SHOCK

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



➤ **Shock**

➤ **Shock Emergencies and Treatment**

# 16:5 POISONING



- **Poison:** any substance that causes a harmful reaction to the outside or inside of the body
- Poisoning can be caused by: *ingesting* substances, *inhaling* gases, *injecting* substances, or *contacting* skin with poison
- First aid varies depending on type of poison, injury involved, and the method of contact
- If victim is unconscious, check for breathing & provide assistance as necessary
- If unconscious victim is breathing, position on their side so fluids can drain from mouth

# 16:5 POISONING

## Ingestion Poisoning



- If poison has been swallowed, immediate care must be provided before poison can be absorbed
- Call poison control center (PCC) or physician immediately
- Save label or container of substance
- Calculate or estimate how much was taken & the time it occurred
- If victim vomits save a sample
- If PCC tells you to induce vomiting, tickle back of throat, give warm saltwater to drink, or syrup of ipecac only if directed
- Never induce vomiting in unconscious victim
- Give activated charcoal if recommended by PCC

# 16:5 POISONING



## Inhalation Poisoning

- If poisoning is caused by inhalation of dangerous gases, the victim must be removed immediately from the area before being treated
- Carbon monoxide is an odorless, colorless, & difficult to detect gas that is a commonly inhaled poison
- Before entering the danger area, take a deep breath of fresh air & don't breathe the gas while you are removing the victim
- After rescuing the victim, immediately check for breathing
- Provide artificial respiration if needed
- Obtain medical help immediately

# 16:5 POISONING

## Contact Poisoning



- Caused by chemical or poisons coming in contact with victim's skin
- Use large amounts of water to wash skin for at least 15-20 min
- Remove any clothing/jewelry that contains the substance
- Call PCC or physician for additional instructions
- Obtain medical help ASAP for burns or injuries
- If a poisonous plant (poison ivy, oak, or sumac): wash area with soap & water, use Calamine or Caladryl for sores

# 16:5 POISONING

## Injection Poisoning

- Occurs when an insect, spider, or snake bites or stings a victim
- If arm or leg is affected, position the area below the level of the heart
- Watch victim for allergic reaction (redness & swelling at site, itching, hives, pain, swelling of throat, dyspnea, dizziness, change in LOC)

THE "BLACK WIDOW" SPIDER



A. TOP VIEW



B. UNDERSIDE



SCORPION



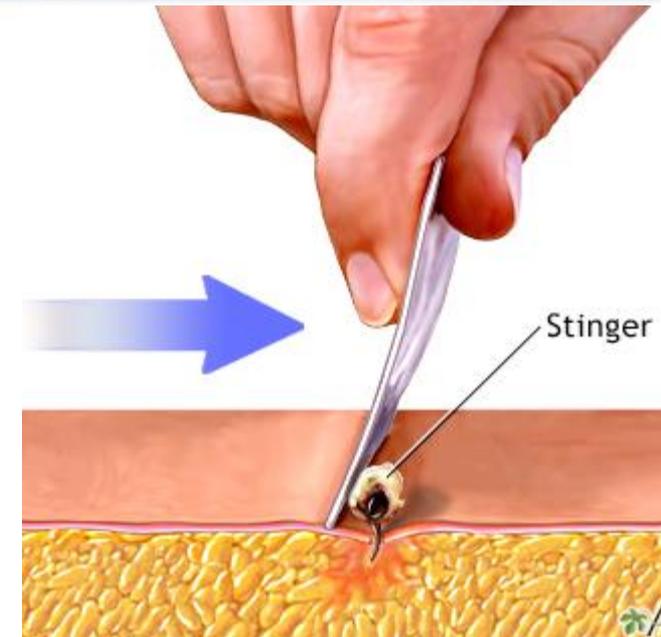
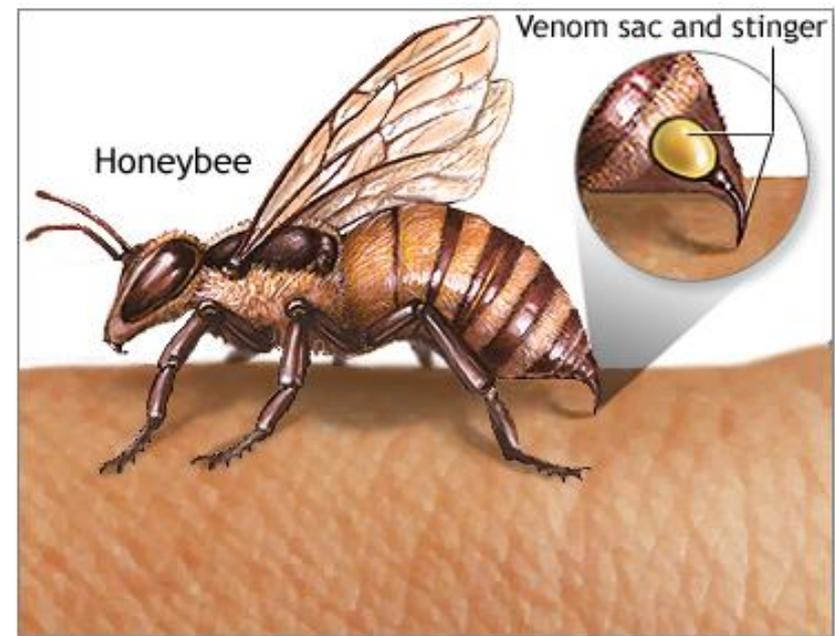
BROWN RECLUSE

# 16:5 POISONING

## Injection Poisoning

### **Insect Sting:**

- Remove embedded stinger by scraping stinger away from skin with edge of rigid card (credit card or tongue depressor)
- Don't use tweezers because they can puncture venom sac
- Wash area with soap and water
- Apply sterile drsg & cold pack to dec edema

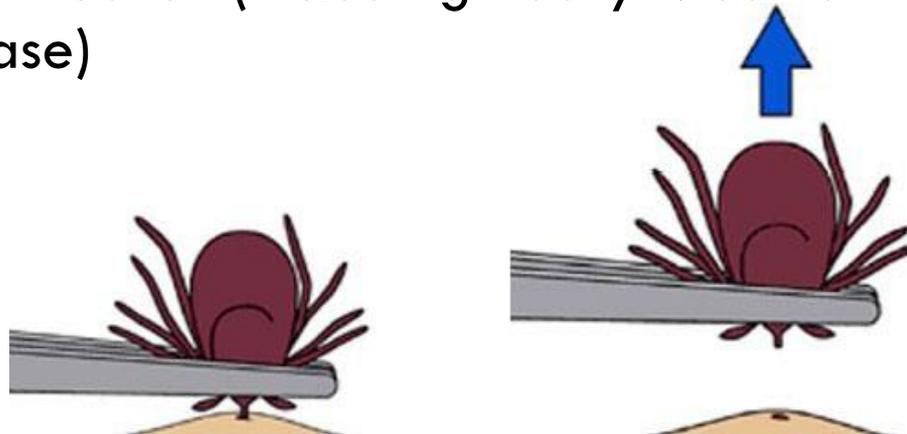


# 16:5 POISONING

## Injection Poisoning

### Tick bite:

- Use tweezers to slowly pull the tick out
- Wash area with soap and water
- Apply antiseptic
- Watch for signs of infection (including Rocky Mountain spotted fever or Lyme disease)



# 16:5 POISONING

## Injection Poisoning

### **Snakebite or spider bite:**

- Wash the wound
- Immobilize the area, positioning it lower than heart if possible
- Don't cut the wound or apply tourniquet
- Monitor victim's breathing & obtain medical help ASAP



# 16:5 POISONING

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



- **First Aid: Chemical Poisoning**
- **Mayo Clinic Minute: Tips to Best Remove Ticks**
- **Properly Remove a Honeybee Stinger**

# 16:6 BURNS

- Injury caused by fire, heat, chemical agents, radiation, and/or electricity
- Classifications of burns:
  - 1) Superficial or 1<sup>st</sup> degree
  - 2) Partial-thickness or 2<sup>nd</sup> degree
  - 3) Full-thickness or 3<sup>rd</sup> degree



FIRST-DEGREE

Superficial burn involving only the epidermis. It is characterized by redness, pain, and swelling. It is the least severe type of burn and usually heals within a few days.



SECOND-DEGREE

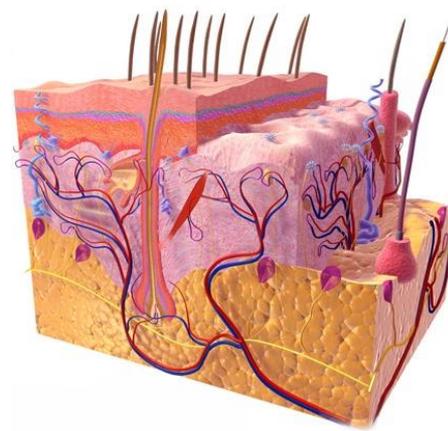
Partial-thickness burn involving the epidermis and part of the dermis. It is characterized by redness, pain, swelling, and the formation of blisters. It is more severe than a first-degree burn and usually heals within a few weeks.



THIRD-DEGREE

Full-thickness burn involving all layers of the skin. It is characterized by a dark, charred, and swollen area. It is the most severe type of burn and usually requires skin grafting for healing.

# 16:6 BURNS



- 1) **Superficial or 1<sup>st</sup> degree**-least severe; involves epidermis; heals w/in 5-6 days without scarring; skin is red or discolored; mild swelling; pain; results from sunburn or brief contact with hot objects/steam
- 2) **Partial-thickness or 2<sup>nd</sup> degree**-involves epidermis & dermis; blister or vesicle forms; skin is red or mottled; swelling; surface of skin appears wet; painful; takes 3-4 wks to heal; results from excessive exposure to sun, sunlamp, boiling liquids, fire
- 3) **Full-thickness or 3<sup>rd</sup> degree**-most severe; involves all skin layers & underlying tissues; looks white or charred; can be painful or not if nerve endings destroyed; life-threatening; results from fire, electricity, immersion in boiling liquids

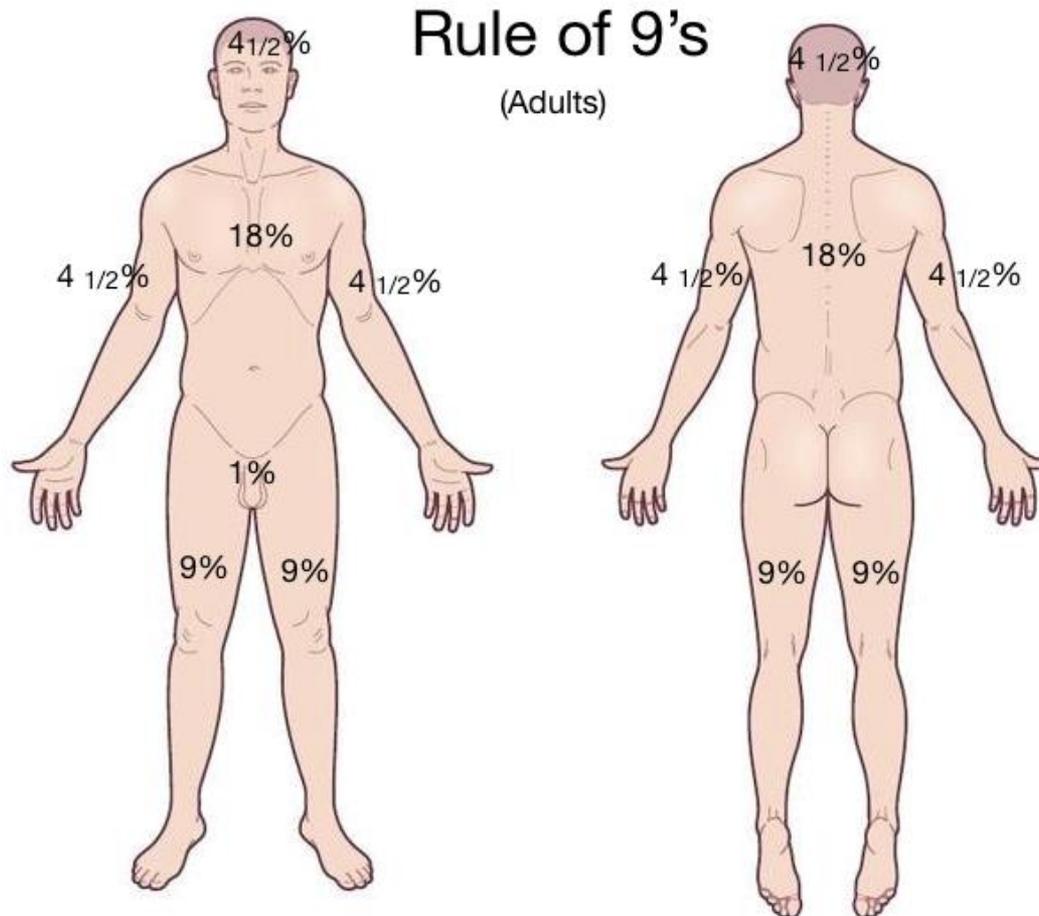
# 16:6 BURNS



- First aid is directed toward removing the source of heat, cooling affected area, covering the burn, relieving pain, observing & treating for shock, preventing infection
- Medical treatment not usually required for superficial & mild partial-thickness burns
- Medical care needed if  $> 15\%$  of surface of adult's body is burned ( $>10\%$  for child)
- Medical care should be obtained if burns affect face or resp tract, victim has dyspnea, or are 3<sup>rd</sup> degree

# 16:6 BURNS

Rule of nines is used to calculate % of body surface burned:



# 16:6 BURNS



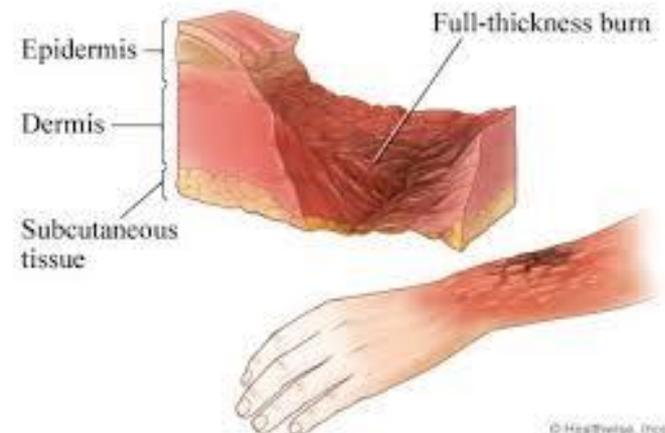
## Superficial & Mild Partial-Thickness Burns:

- Cool area by flushing with large amounts of cool water
- Do not use ice or ice water
- After pain subsides, use dry, sterile gauze to blot area dry
- Apply nonadhesive, dry, sterile drsg to prevent infection
- Elevate area to reduce swelling
- Do not apply cotton, tissues, oils, grease, or butter
- Do not break or open blisters

# 16:6 BURNS

## Severe Partial-Thickness & Full Thickness Burns:

- Call for medical help immediately
- Cover burned area with thick, sterile drsg
- Elevate hands or feet if they are burned
- Don't allow victim to walk if legs or feet are burned
- If particles of clothing are attached to burned areas, do not attempt to remove them
- Watch for resp distress and shock



# 16:6 BURNS



## Chemical Burns:

- Use large amounts of water to flush affected areas for 15-30 min or until medical help arrives
- Remove any clothing or jewelry that contains the chemicals
- If eyes are burned, flush with large amounts of water for 15-30 min
- If only one eye is injured, tilt victim's head so injured eye can be flushed without allowing water to run into uninjured eye

# 16:6 BURNS

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



➤ **Burns – Lay Rescuer**

# 16:7 HEAT EXPOSURE

- Excessive exposure to heat or high external temps can lead to life-threatening emergency
- **Heat cramps**-muscle pains & spasms that result from loss of water & salt through perspiration
- Apply firm pressure to cramped muscle; rest; move to cooler area; drink small sips of water or electrolyte solution (sports drink)

## HEAT STRESS INJURIES

<h3>HEAT RASH</h3> <ul style="list-style-type: none"><li>• Red raised rash</li><li>• Impairs sweating and decreases effectiveness of sweating</li></ul>	<h3>HEAT CRAMPS</h3> <ul style="list-style-type: none"><li>• Muscle cramps, pain or spasms in the abdomen, arms or legs</li></ul>
<h3>HEAT EXHAUSTION</h3> <ul style="list-style-type: none"><li>• Moist, clammy skin</li><li>• Dilated pupils</li><li>• Normal or subnormal temperature</li><li>• Dizziness, confusion and/or nausea</li><li>• Weak pulse</li><li>• Rapid breathing</li></ul>	<h3>HEAT STROKE</h3> <ul style="list-style-type: none"><li>• Dry, red, hot skin</li><li>• Pupils constricted</li><li>• Very high body temperature</li><li>• Dizziness, confusion and/or nausea</li><li>• Pulse rapid</li><li>• Unconsciousness</li><li>• Coma</li><li>• Death</li></ul>

# 16:7 HEAT EXPOSURE

- **Heat exhaustion**-victim is exposed to heat & experiences loss of fluids thru sweating
- Body temp is about normal or slightly elevated
- If not treated quickly it will lead to heat stroke

## *Signs and symptoms:*

- Pale & clammy skin
- Diaphoresis
- Weakness
- Headache
- Muscle cramps
- N/V
- Dizziness & fainting



# 16:7 HEAT EXPOSURE

## Heat exhaustion

### *Treatment:*

- Move victim to cooler location
- Loosen or remove excessive clothing
- Apply cool, wet clothes
- Elevate feet 12"
- Give small sips of cool water (4oz q15min)

The infographic is a vertical comparison chart. The top header is split into two colored sections: orange for 'HEAT EXHAUSTION' and red for 'HEAT STROKE', with the word 'OR' in the center. Below this, a circular icon is split vertically, with a dizziness icon on the orange side and a headache icon on the red side. The main body of the infographic is a human silhouette, also split vertically. The left side (orange) lists symptoms: 'Faint or dizzy', 'EXCESSIVE SWEATING', 'Cool, pale, clammy skin', 'Nausea or vomiting', 'Rapid, weak pulse', and 'Muscle cramps'. The right side (red) lists symptoms: 'Throbbing headache', 'REDUCED SWEATING', 'Body temperature above 103° Red, hot, dry skin', 'Nausea or vomiting', 'Rapid, strong pulse', and 'May lose consciousness'. At the bottom, the orange section lists treatments: 'Get to a cooler, air conditioned place', 'Drink water if fully conscious', and 'Take a cool shower or use cold compresses'. The red section has a large white box with 'CALL 9-1-1' and the instruction 'Take immediate action to cool the person until help arrives'. A yellow footer at the very bottom states: 'If your condition persists or if you are uncertain if you have heat exhaustion or heatstroke, call 9-1-1'.

HEAT EXHAUSTION	OR	HEAT STROKE
Faint or dizzy		Throbbing headache
EXCESSIVE SWEATING		REDUCED SWEATING
Cool, pale, clammy skin		Body temperature above 103° Red, hot, dry skin
Nausea or vomiting		Nausea or vomiting
Rapid, weak pulse		Rapid, strong pulse
Muscle cramps		May lose consciousness
<ul style="list-style-type: none"><li>Get to a cooler, air conditioned place</li><li>Drink water if fully conscious</li><li>Take a cool shower or use cold compresses</li></ul>		<b>CALL 9-1-1</b> <ul style="list-style-type: none"><li>Take immediate action to cool the person until help arrives</li></ul>
If your condition persists or if you are uncertain if you have heat exhaustion or heatstroke, call 9-1-1		

# 16:7 HEAT EXPOSURE

**Heat stroke**-body is unable to eliminate excess heat & internal temps rise to 105 or higher

- It is a medical emergency caused by prolonged exposure to high temps
- Body is no longer able to sweat

*Signs and symptoms:*

- Red, hot, & dry skin
- Pulse rapid but strong
- Victim may lose consciousness

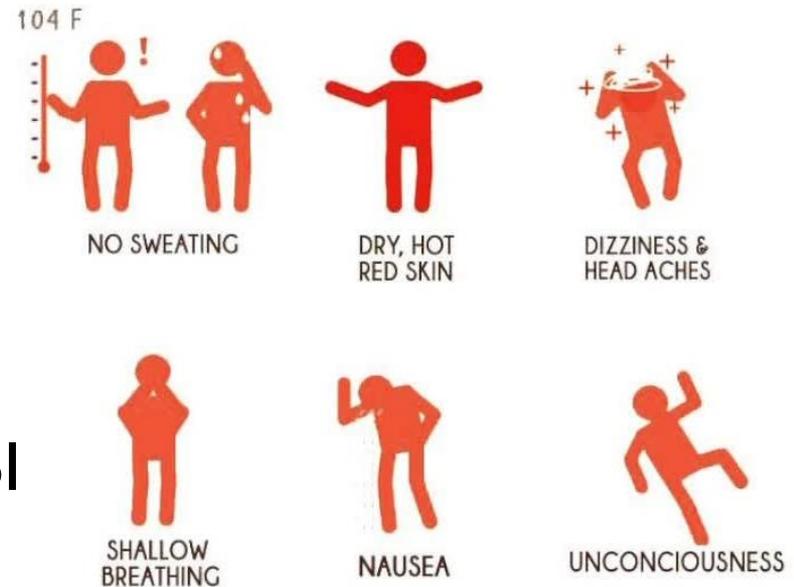


# 16:7 HEAT EXPOSURE

## Heat stroke

### *Treatment:*

- Geared primarily to cooling the body quickly
- Place victim in tub of cool water or sponge skin with cool water
- Ice/cold packs on wrists, ankles, axillary area, & groin



# 16:7 HEAT EXPOSURE

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



➤ **Heat Related Emergencies**

# 16:8 COLD EXPOSURE

- Exposure to cold external temps can cause body tissues to freeze & body processes to slow down which can lead to death
- **Hypothermia**-body temp is less than 95°F from prolonged exposure to cold; elderly more susceptible

*Signs and symptoms:*

- Shivering
- Numbness
- Weakness or drowsiness
- Poor coordination
- Confusion
- Loss of consciousness



# 16:8 COLD EXPOSURE

## Hypothermia

### *Treatment:*

- Get victim to warm area
- Remove wet clothing
- Slowly warm with blankets or put on dry clothes
- Warm nonalcoholic , noncaffeinated liquids by mouth if fully conscious
- Do not warm too quickly because it can cause heart arrhythmias

## + HYPOTHERMIA SYMPTOMS

- Shivering
- Clumsiness
- Slurred speech
- Confusion
- Drowsiness
- Lack of concern about self
- Weak pulse
- Shallow breathing



TRAI.MOB.COM

Source: Mayo

## 16:8 COLD EXPOSURE

- **Frostbite**-freezing of tissue fluids with damage to the skin & underlying tissues
- Caused by exposure to freezing or below-freezing temps
- Common sites: fingers, toes, ears, nose, cheeks
- Early signs & symptoms are redness and tingling

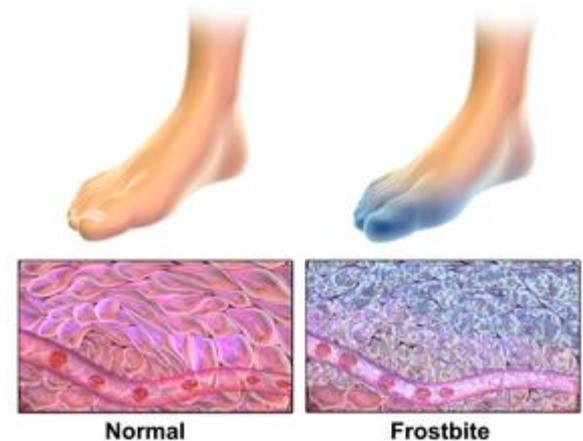


# 16:8 COLD EXPOSURE

## Frostbite

*Signs and symptoms:*

- Pale, glossy skin, white or grayish yellow in color
- Blisters
- Skin cold to the touch
- Numbness
- Pain that gradually subsides until victim doesn't feel any pain
- If exposure continues, victim may become confused, lethargic, & incoherent and shock, unconsciousness, & death may occur



# 16:8 COLD EXPOSURE

## Frostbite

### *Treatment:*

- Maintaining respirations
- Treat for shock
- Warm the affected parts
- Prevent further injury
- Because victim usually doesn't feel pain, part must be warmed carefully, taking care not to burn the injured tissue.
- Affected parts may be immersed in warm water at 100-104 degrees



# 16:8 COLD EXPOSURE



## Frostbite

### *Treatment:*

- Don't use heat lamps, heat from oven or stove
- Don't massage or rub affected parts, it may cause **gangrene** (death of tissue)
- Avoid opening or breaking blisters
- Don't allow victim to walk or stand if feet, legs, or toes are affected
- Dry, sterile drsg can be placed between toes or fingers to prevent them from rubbing & causing further injury

# 16:8 COLD EXPOSURE

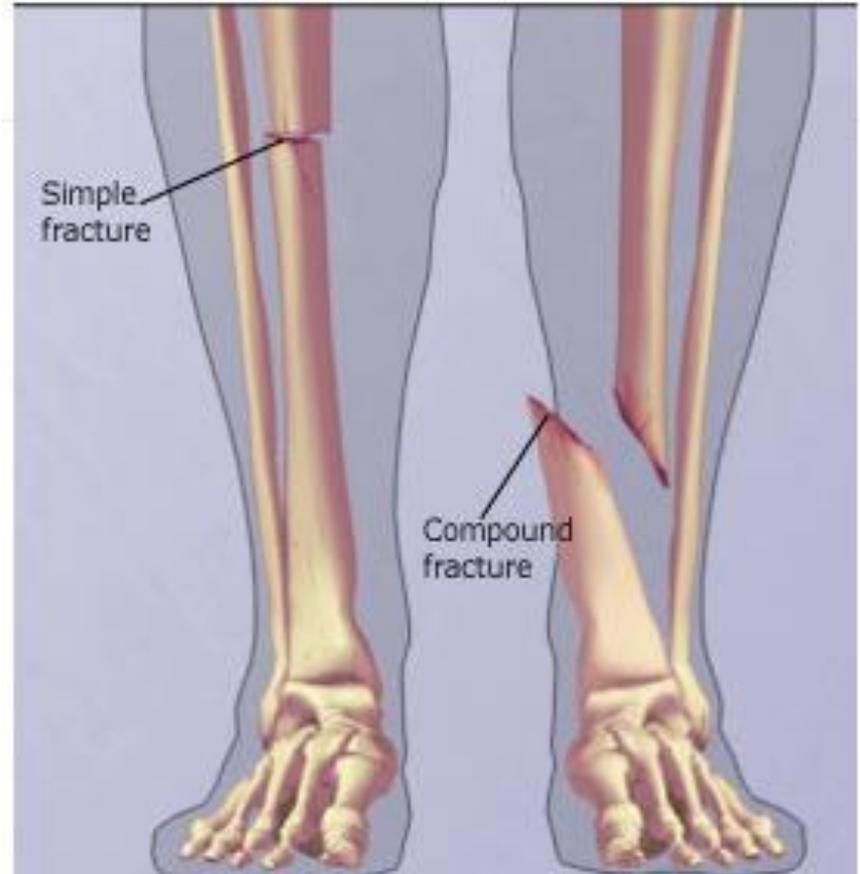
Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:

▶ **Cold Related Emergencies**



# 16:9 BONE AND JOINT INJURIES: FRACTURES

- **Fracture**-break in the bone
- **Closed or simple fracture**-doesn't have an open or external wound on skin
- **Compound or open fracture**-bone break that is accompanied by an open wound on the skin



# 16:9 BONE AND JOINT INJURIES: FRACTURES

## Fractures

*Signs and symptoms:*

- Deformity
- Limited or loss of motion
- Pain & tenderness at site
- Swelling or discoloration
- Protrusion of bone thru skin
- Victim heard the bone snap or felt a grating sensation (crepitation)
- Abnormal movements w/in a part of the body



# 16:9 BONE AND JOINT INJURIES: FRACTURES

## Fractures

### *Treatment:*

- Maintain respirations
- Treat for shock
- Keep broken bone from moving
- Prevent further injury
- Use splints or slings to prevent movement of injured part
- Get help!



# 16:9 BONE AND JOINT INJURIES: DISLOCATION

- **Dislocation**-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



# 16:9 BONE AND JOINT INJURIES: DISLOCATION

## Dislocation

*Signs and symptoms:*

- *Deformity*
- *Limited or abnormal movement*
- *Swelling*
- *Discoloration*
- *Pain and tenderness*
- *Shortening or lengthening of the affected arm or leg*



# 16:9 BONE AND JOINT INJURIES: DISLOCATION

## Dislocation

*Treatment:*

- Same as for fracture
- Don't attempt to reduce it (replace the bone in the joint)
- Immobilize with splint and/or sling



# 16:9 BONE AND JOINT INJURIES: SPRAIN

- **Sprain**-injury to tissues surrounding a joint; ligaments & tendons are stretched or torn
- Common sites: ankles and wrists
- *Signs and symptoms*: edema, pain, discoloration, impaired motion
- Sprains frequently resemble fractures or dislocations—treat as fracture if any doubt



# 16:9 BONE AND JOINT INJURIES: SPRAIN

## Sprain

### *Treatment:*

- Cold compress to dec edema & pain
- Elevate the affected part
- Rest the affected part
- Apply elastic bandage to provide support but avoid stretching bandage too tightly
- Obtain medical help if swelling is severe or any question of fracture



# 16:9 BONE AND JOINT INJURIES: STRAIN

- **Strain**-overstretching of a muscle
- Caused by overexertion or by lifting
- Frequent site: back
- *Signs and symptoms:* pain, edema, or bruising



## *Treatment:*

- Rest affected muscle
- Bedrest with backboard if back strain
- Apply cold application to reduce edema
- After edema dec, apply warm, wet compresses to relax muscles

# 16:9 BONE AND JOINT INJURIES: SPLINTS

- **Splints**-devices to immobilize injured parts

- *Types of splints:*

- Pneumatic or air splints
- Padded boards
- Traction splints



- Splints can also be made from cardboard, newspapers, pillows, boards, etc.

# 16:9 BONE AND JOINT INJURIES: SPLINTS

- Splints need to be long enough to immobilize the joint above and below the injured area to prevent movement
- Should be padded, especially at bony areas & over injury site
- Use strips of cloth, roller gauze, triangular bandages, etc. to tie splint in place
- Apply as not to create pressure over the injury site
- If open wound, control bleeding before applying splint



# 16:9 BONE AND JOINT INJURIES: SPLINTS

- Never attempt to reposition bone
- Don't move victim, splint wherever you find them
- After splint is applied, check skin temp (should be warm), skin color (pale or blue indicates poor circulation), edema, numbness or tingling, & pulse
- Loosen ties holding the splint for any signs of impaired circulation or neurological status



# 16:9 BONE AND JOINT INJURIES: SLINGS

- Slings are available in many different forms
- **Triangular bandages**-common type of sling
- Slings are used to support arm, hand, forearm, & shoulder
- Slings can be used with casts or to provide immobility if fracture of arm or shoulder is suspected



# 16:9 BONE AND JOINT INJURIES: SLINGS



## *Sling principles:*

- When used on an arm, hand should be higher than elbow
- Check circulation & sensation (skin temp, color, edema, pain, tingling, numbness, cap refill)
- Limit movement of limb while applying sling
- If using triangular bandage make sure knot tied at neck doesn't press against bone (tie to either side of spinal column) & use padding under knot to protect skin
- May need to apply a second bandage around thoracic region to hold arm against the body with shoulder injuries

# 16:9 BONE AND JOINT INJURIES: NECK OR SPINE INJURY

- Neck & spine injuries are the most dangerous types of injuries involving bones and joints
- Movement can result in permanent damage resulting in paralysis
- Avoid any movement of victim if at all possible
- Wait for backboard and adequate help to arrive for transfer



# 16:9 BONE AND JOINT INJURIES

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



- **Emergency Medical Care: How to Treat an Open Fracture During First Aid**
- **How to Apply a Sling & Swathe**
- **How to Wrap a Leg with an ACE Brand Elastic Bandage**
- **Practical First Aid #18 – Sprains & Strains**
- **What is the Rice Method for Injuries?**
- **What to do if Someone Has a Spinal Cord Injury**

# 16:10 SPECIFIC INJURIES: EYE



- An eye injury always involves danger of vision loss
- Obtaining help of an eye specialist is top priority
- **Foreign objects** in the eye (dust, dirt, etc.) cause irritation & can scratch the eye or become embedded in eye tissue
- *Signs & symptoms:* redness, burning sensation, pain, watering or tearing, presence of visible objects in the eye

# 16:10 SPECIFIC INJURIES: EYE

## Foreign body

### *Treatment:*

- If it's floating freely, don't let victim rub eye, wash your hands, gently draw upper lid down over lower lid to stimulate formation of tears
- If that doesn't work use thumb & forefinger to grasp eyelashes & gently raise upper lid, have victim look down & tilt head toward the injured side, then use water to gently flush eye or use corner of sterile gauze to remove object
- If that doesn't remove object or it is embedded make no attempt to remove it. Apply dry, sterile drsg & get help



# 16:10 SPECIFIC INJURIES: EYE



- **Blows to the eye**-can be from a fist, an accident, or explosion; may cause contusions or black eyes as a result of internal bleeding & torn tissues inside the eye
- Can lead to vision loss so go to eye specialist ASAP
- Apply sterile drsg or eye shield & keep victim lying flat
- May be necessary to cover both eyes to prevent involuntary movement of the injured eye



## 16:10 SPECIFIC INJURIES: EYE

- **Penetrating injuries**-these can cut the eye tissue; extremely dangerous
- If an object is protruding from the eye, make no attempt to remove it
- Support object by loosely applying drsg; paper cup with hole cut in bottom can also be used to stabilize the object & prevent it from moving
- Apply drsg to both eyes to prevent involuntary movement of injured eye
- Avoid applying pressure to eye while applying drsg
- Keep victim lying flat on back to prevent fluids from draining out of eye

# 16:10 SPECIFIC INJURIES: EAR

- Ear injuries can result in rupture or perforation of eardrum

## *Treatment:*

- If torn or detached tissue-apply drsg to control bleeding; wrap any detached tissue in gauze & wet with water or saline, put it in plastic bag to keep cool & moist; send to hospital with victim
- Keep victim lying flat but raise head (unless medically prohibited)



# 16:10 SPECIFIC INJURIES: EAR

## Ear Injuries

### *Treatment:*

- If ruptured or perforated eardrum, place sterile gauze loosely in outer ear canal. Don't let victim hit side of head to restore hearing. Don't put liquids in ear.
- If clear fluid or blood-tinged fluid draining from ear it may be sign of skull or brain injury. Allow fluid to flow from ear. Keep victim lying down, turn on injured side, elevate head & shoulders slightly to allow fluid to drain.



# 16:10 SPECIFIC INJURIES: HEAD OR SKULL



- Wounds or blows to head and skull can cause brain injury

## *Signs and symptoms:*

- Clear or blood-tinged CSF draining from nose or ears
- Loss of consciousness
- Headache
- Visual disturbance
- Pupils unequal size
- Muscle paralysis
- Speech disturbances
- Convulsions
- N/V

# 16:10 SPECIFIC INJURIES: HEAD OR SKULL

- Keep victim lying flat & treat for shock; if no neck/spine injury can elevate head slightly
- Watch for resp distress
- Make NO attempt to stop the flow of fluid; loose drsg can be positioned to absorb flow
- Don't give victim any liquids; can use wet cloth to moisten lips, tongue, & inside of mouth
- If victim loses consciousness, note how long victim is unconscious & report to EMS



# 16:10 SPECIFIC INJURIES: NOSE

- Nose injuries usually cause epistaxis-nosebleed
- Epistaxis can also be caused by change in altitude, strenuous activity, high blood pressure, & rupture of small blood vessels after a cold



# 16:10 SPECIFIC INJURIES: NOSE

*Treatment:*

- Keep victim calm
- Have victim sit with head leaning slightly forward
- Apply pressure by pressing nostrils toward midline
- If pressure doesn't stop bleeding, insert small piece of gauze in nostril & then apply pressure on outer surface of nostril, leave a piece of gauze extending out of nostril so it can be removed later (don't use cotton balls)
- Apply cold compress to bridge of nose
- If bleeding doesn't stop or suspected fracture seek medical care



# 16:10 SPECIFIC INJURIES: CHEST

- Chest injuries are usually medical emergencies because they may involve heart, lungs, and major vessels
- Types of chest wounds: sucking, penetrating, & crushing
- **Sucking chest wound**-deep open chest wound that allows air in and out of chest without breathing, the partial vacuum that is normally present in pleura is destroyed causing the lung on the injured side to collapse



# 16:10 SPECIFIC INJURIES: CHEST

## Sucking chest wound

### *Treatment:*

- Obtain immediate medical help
- Airtight drsg must be placed over wound to prevent air flow into wound
- Aluminum foil, plastic wrap, or other nonporous material should be used to cover wound
- Tape drsg on 3 sides, 4<sup>th</sup> side should be left loose to allow air to escape when victim exhales



# 16:10 SPECIFIC INJURIES: CHEST

## Sucking chest wound

### *Treatment:*

- When victim inhales, the neg pressure of inspirations draws drsg against wound & creates airtight seal
- Positon victim on injured side & elevete head & chest slightly, allows the uninjured lung to expand more freely & prevents pressure on uninjured lung from blood & damaged tissue



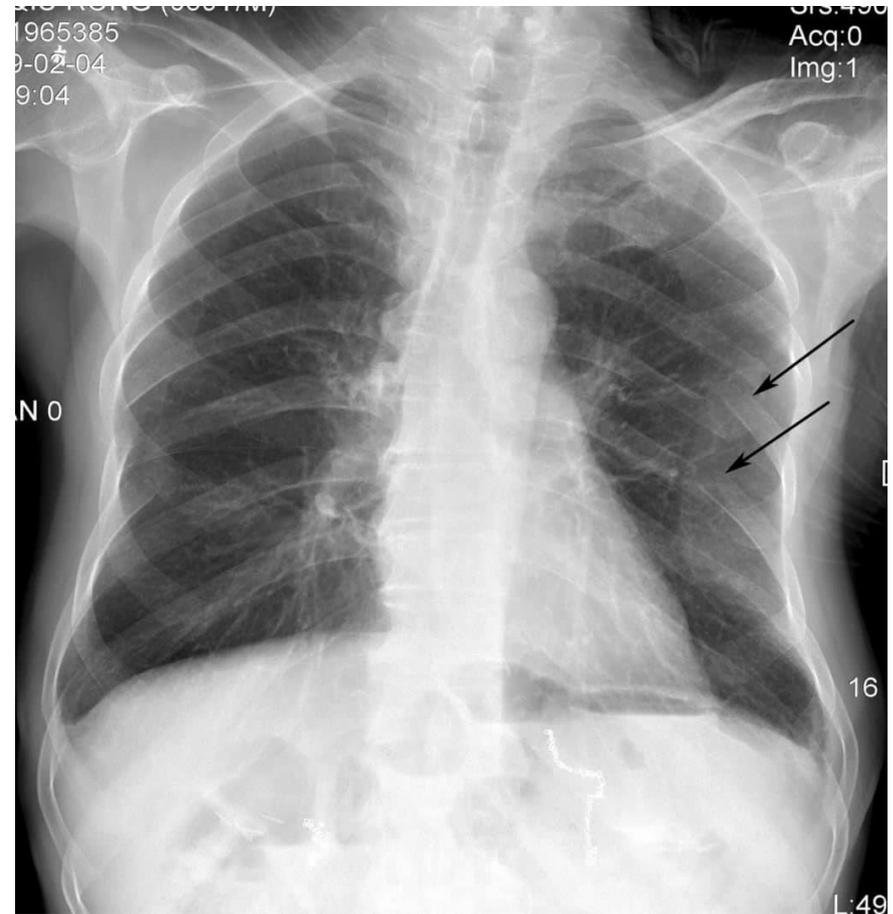
# 16:10 SPECIFIC INJURIES: CHEST

- Penetrating injuries to the chest-can cause a sucking chest wound or damage to heart/blood vessels
- Do NOT remove any object protruding from the chest
- If possible immobilize the object by placing drsg around it & taping drsg in position



# 16:10 SPECIFIC INJURIES: CHEST

- Crushing injuries to the chest-caused in car accident or when heavy object hits chest
- Fractured ribs & damage to lungs/heart can occur
- Place victim in comfortable position, if possible elevate head & shoulders to help breathing unless injury to neck/spine suspected



# 16:10 SPECIFIC INJURIES: ABDOMINAL

- Abdominal injuries can damage internal organs and bleeding in major blood vessels
- Intestines and other abdominal organs may protrude from open wound
- Medical emergency-get help ASAP because bleeding, shock, & damage to organs can be fatal



# 16:10 SPECIFIC INJURIES: ABDOMINAL

## Abdominal injuries

*Signs and symptoms:*

- Severe abd pain or tenderness
- Protruding organs
- Open wounds
- N/V
- Abd muscle rigidity
- Shock



# 16:10 SPECIFIC INJURIES: ABDOMINAL

## Abdominal injuries

Treatment:

- Victim flat on back
- Pillow or rolled blanket under the knees to relax abd muscles & elevate head & shoulders to aid breathing
- Cover area with sterile dressing moistened with sterile water, saline, or warm tap water
- Cover dressing with plastic wrap to keep dressing moist
- Then cover the plastic wrap with aluminum foil or towel to keep area warm
- Do not attempt to reposition protruding organs
- Keep pt NPO



# 16:10 SPECIFIC INJURIES: GENITAL ORGANS



- Injuries to genital organs can result from falls, hits, explosions, or zippers
- Can cause severe pain, bleeding, and shock
- *Treatment:*
  - Control bleeding with direct pressure
  - Treat for shock
  - Don't remove any protruding objects
  - Save any torn tissue, wrap in moistened gauze, & place in plastic bag
  - Use ice pack to dec bleeding & relieve pain

# 16:10 SPECIFIC INJURIES

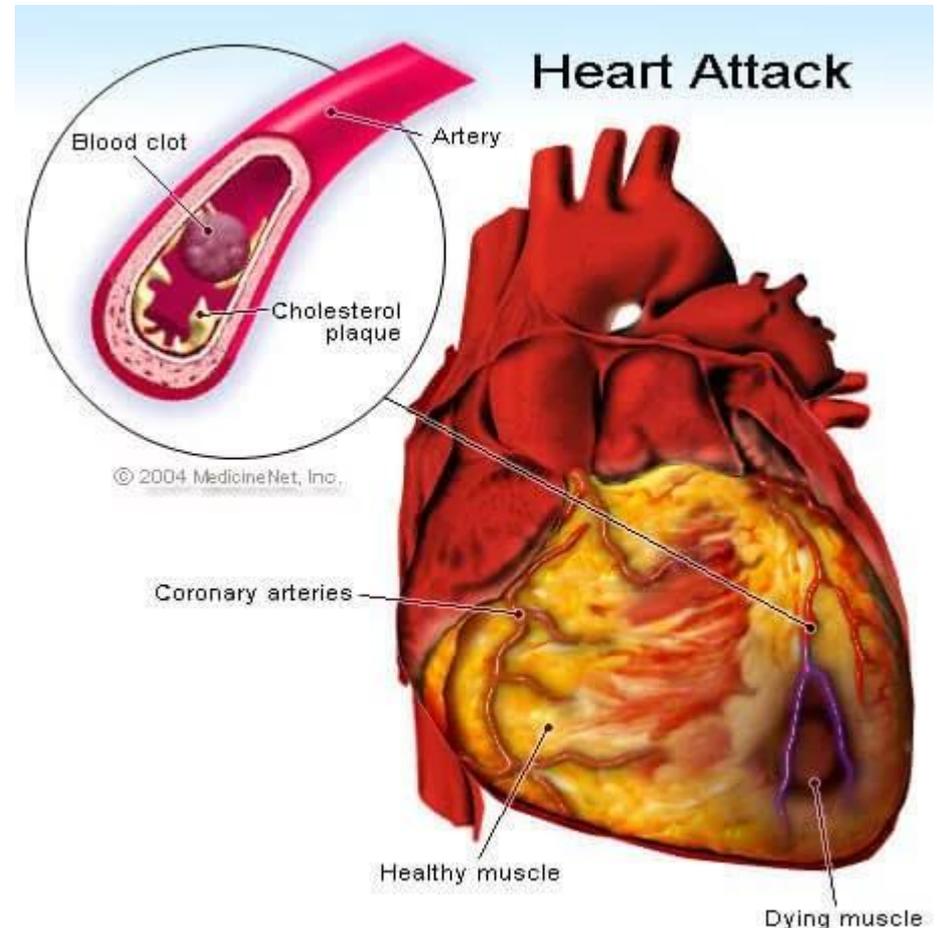
Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



- **Eye Injuries**
- **How to Treat a Head Injury**
- **How to Treat Nose Bleeds**
- **Dressing Abdominal Evisceration**
- **Dressing an Impaled Object**
- **Sucking Chest Wound**

# 16:11 SUDDEN ILLNESS: HEART ATTACK

- Heart attack AKA coronary thrombosis, coronary occlusion, or myocardial infarction
- Occurs when there is blockage in one or more coronary arteries
- If heart stops, start CPR



# 16:11 SUDDEN ILLNESS: HEART ATTACK

## Heart attack

*Signs and symptoms:*

- Severe, painful pressure under sternum; pain radiating to the shoulders, arms, neck, and jaw
- SOB
- Cyanotic lips and nail beds
- Weak, anxious, apprehensive
- N/V
- Diaphoresis
- Loss of consciousness



## Common Heart Attack Warning Signs



Learn more at [Heart.org/HeartAttack](https://www.heart.org/HeartAttack).

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# 16:11 SUDDEN ILLNESS: HEART ATTACK

## Heart attack

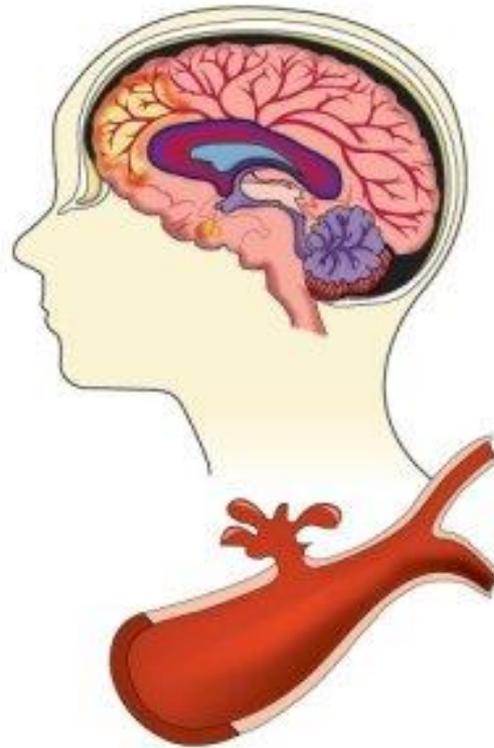
*Treatment:*

- Encourage pt to relax
- Place in comfortable position
- Call 911
- Treat for shock
- Prevent unnecessary stress & movement to reduce strain on heart
- Qualified individuals may give aspirin

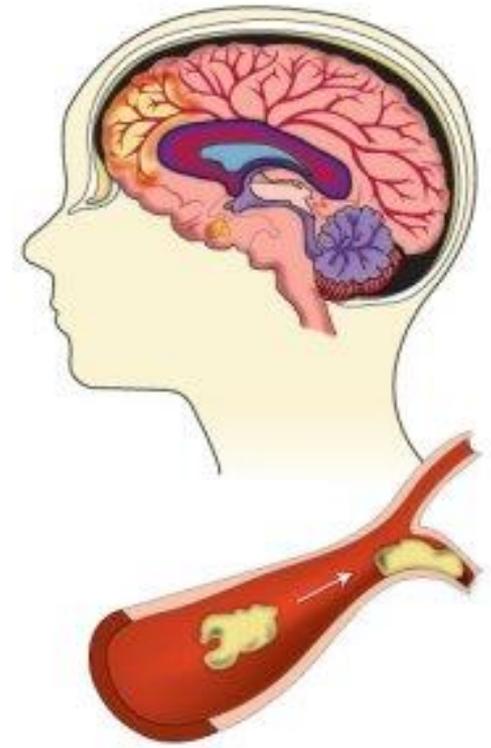


# 16:11 SUDDEN ILLNESS: CEREBROVASCULAR ACCIDENT

- CVA AKA stroke, apoplexy, or cerebral thrombosis
- Caused by clot in cerebral artery or hemorrhage from a blood vessel in the brain
- *Signs and symptoms:* vary depending on part of brain affected



A hemorrhagic stroke occurs when a blood vessel bursts within the brain.



An ischemic stroke occurs when a blood clot blocks the blood flow in an artery within the brain.

# 16:11 SUDDEN ILLNESS: CEREBROVASCULAR ACCIDENT

## CVA

*Signs and symptoms:*

- Numbness
- Paralysis
- Unequal pupils
- Mental confusion
- Slurred speech
- N/V
- Difficulty breathing & swallowing
- Loss of consciousness



# 16:11 SUDDEN ILLNESS: CEREBROVASCULAR ACCIDENT

## CVA

### *Treatment:*

- Maintain respirations
- Position victim on back with head slightly elevated or on side to allow secretions to drain from mouth
- Keep NPO
- Prevent unnecessary stress & avoid unnecessary movement
- Get medical help ASAP – if delivered in first 3 hours of symptoms, thrombolytics, like TPA, can prevent brain damage



# 16:11 SUDDEN ILLNESS: FAINTING

- **Fainting**-temporary reduction in blood supply to brain
- It may result in partial or complete loss of consciousness
- Victim usually regains consciousness after being supine



# 16:11 SUDDEN ILLNESS: FAINTING



- Early signs & symptoms-dizziness, extreme pallor, diaphoresis, coldness of skin, nausea, numbness & tingling of hands/feet
- If early symptoms noted, have victim lie down or sit in chair & position head at level of knees
- If victim loses consciousness, try to prevent injury & keep in supine position
- Elevate legs 12”
- Loosen tight clothing & maintain open airway
- Use cool water to bathe victim’s face
- Allow victim to get up gradually once recovered

# 16:11 SUDDEN ILLNESS: CONVULSION



- Convulsion-a type of seizure (strong involuntary contraction of muscles)
- Causes can be high body temp, head injury, brain disease, and brain disorders like epilepsy
- Convulsions cause rigidity of muscles followed by jerking movements
- During a convulsion a pt may stop breathing, bite their tongue, lose bladder/bowel control, injure body parts, have cyanotic face/lips, lose consciousness

# 16:11 SUDDEN ILLNESS: CONVULSION



- After regaining consciousness victim may be confused, disoriented, & c/o headache
- First aid care is directed at preventing self-injury
- Remove dangerous objects from area
- Have pt lie down and place pillow under head
- Don't place anything between pt's teeth
- Don't restrain pt
- When convulsion is over, position pt on side to prevent choking on saliva/vomit

# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS

- Diabetes mellitus is a metabolic disorder caused by lack of or insufficient production of insulin
- Insulin helps transport glucose from blood into cells where it is used to produce energy
- With lack of insulin, sugar builds up in blood
- Diabetics are in danger of developing: *diabetic coma* & *insulin shock*

## Hypoglycaemia Symptoms

low blood sugar



## Hyperglycaemia Symptoms

high blood sugar



# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS



## Diabetic coma AKA hyperglycemia

- Increase in glucose in bloodstream
- Can result from excess intake of sugar, failure to take insulin, or insufficient insulin production
- *Signs & symptoms:* confusion; weakness or dizziness; N/V; rapid, deep resp; dry, flushed skin; sweet or fruity odor to breath
- Victim will eventually lose consciousness & die if not treated

# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS



## Insulin shock AKA hypoglycemia

- Excess amount of insulin in bloodstream (low blood sugar)
- Can result from not eating enough, vomiting after taking insulin, or taking excessive amounts of insulin
- *Signs & symptoms:* weakness; confusion; restless/anxiety; diaphoresis; pale, moist skin; hunger pains; palpitations (rapid, irregular heartbeats)
- Victim may lapse into coma & have convulsions
- Occurs suddenly & condition can deteriorate quickly

# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS



## Insulin shock AKA hypoglycemia

- If victim is conscious, give drink containing sugar (regular soda or juice), place teaspoon of sugar in their mouth, or use glucose tube if available
- If victim is confused, avoid giving hard candy because unconsciousness could occur & victim could choke
- If victim loses consciousness or convulsions start call EMS

# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS



- By observing symptoms & asking victim “Have you eaten today?” & “Have you taken your insulin?” will help determine which condition victim is suffering from
- If victim has taken insulin but not eaten=insulin shock
- If victim has eaten but hasn’t take insulin=diabetic coma



# 16:11 SUDDEN ILLNESS: DIABETES MELLITUS



- If victim is unconscious & there aren't definite symptoms of either condition, you should assume insulin shock; place sugar under tongue (or give glucagon injection) & call EMS
- This is lesser of two evils
- If pt is actually in diabetic coma, blood sugar level can be lowered with medical attention
- If pt is in insulin shock, non reversible brain damage can occur if blood sugar level is not raised immediately

# 16:11 SUDDEN ILLNESS

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



- **Fainting**
- **Heart Attacks**
- **Seizures**
- **Stroke**
- **Diabetic Emergencies**



## 16:12 APPLYING DRESSINGS & BANDAGES

- **Dressing**-sterile covering placed over a wound or injured part; used to control bleeding; absorb blood & secretions; prevent infection; ease pain
- Materials used as drsg include gauze pads & compresses, but should NOT be fluff cotton (cotton balls) because the loose cotton fibers may contaminate the wound
- Clean cloths can be used for drsg in an emergency situation
- Drsg can be held in place with tape or a bandage



## 16:12 APPLYING DRESSINGS & BANDAGES

- **Bandages**-materials used to hold drsg in place, to secure splints, & to support & protect body parts
- Bandages should be applied snugly enough to control bleeding & prevent movement of drsg but not so tightly that they interfere with circulation
- Types of bandages include *roller gauze bandages, triangular bandages, & elastic bandages*

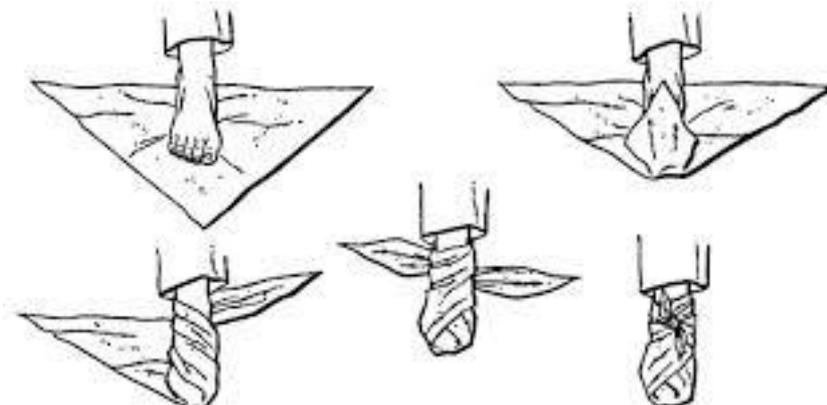
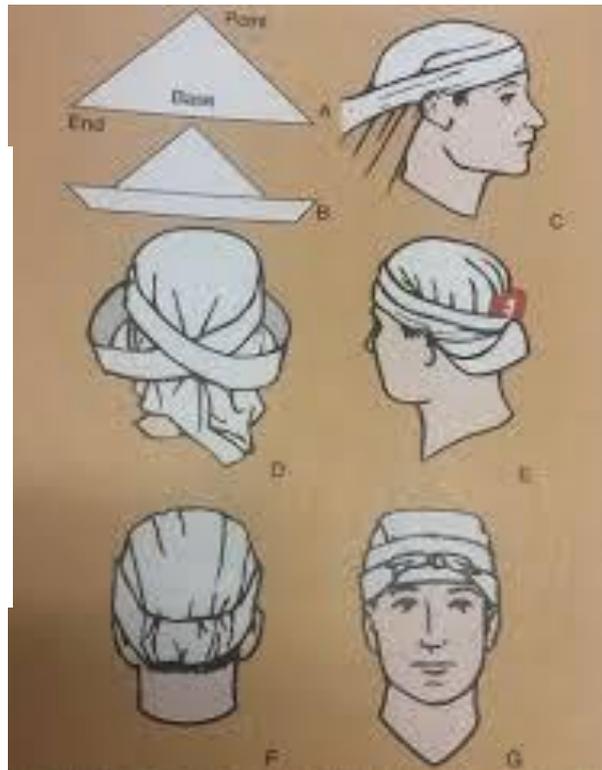
# 16:12 APPLYING DRESSINGS & BANDAGES

- **Roller gauze bandages**-come in variety of widths & are used to hold drsg in place on almost any part of the body



# 16:12 APPLYING DRESSINGS & BANDAGES

• **Triangular bandages**-can be used to secure drsg on head/scalp, as sling, to cover large areas like hand/foot, folded into band of cloth (cravat), or to secure splints or drsg on body parts



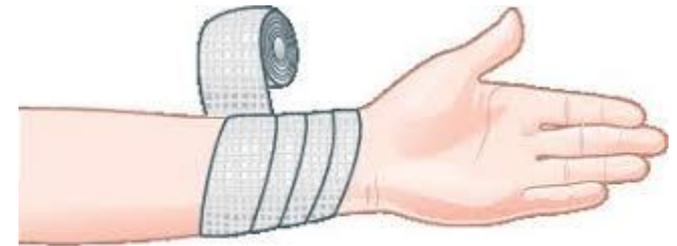
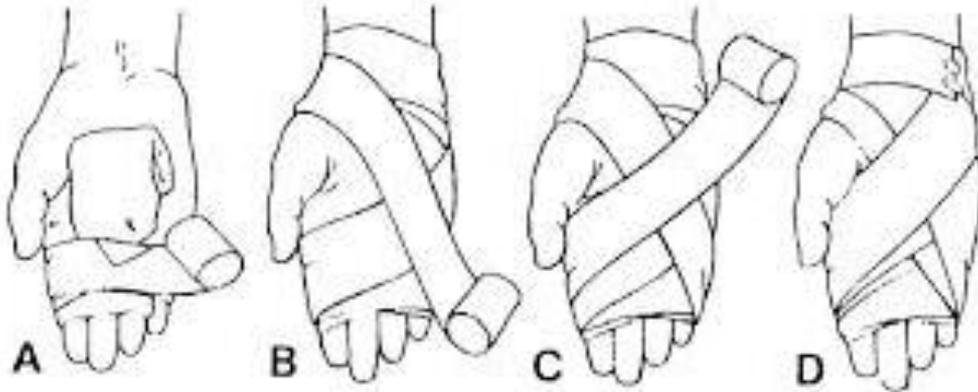
# 16:12 APPLYING DRESSINGS & BANDAGES

- **Elastic bandages**-easy to apply because they readily conform, or mold, to the injured part; can be dangerous if applied too tightly or are stretched during application



# 16:12 APPLYING DRESSINGS & BANDAGES

- Several methods are used to wrap bandages
- Wrap method depends on the body part involved
  - Spiral wrap
  - Figure-eight for joints
  - Finger or recurrent wrap



Spiral Turns

# 16:12 APPLYING DRESSINGS & BANDAGES

- Check circulation after application
- 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 for signs of impaired circulation



# 16:12 APPLYING DRESSINGS & BANDAGES

Go to my website and find the “Unit Videos” heading.  
Watch the following videos in the First Aid folder:



- **Figure Eight Ankle Wrapping**
- **Fingertip Recurrent Bandage**
- **How to Fold Bandage into Narrow Cravat**
- **Practical First Aid #16 – Scalp Injury**