

Disaster Medical Operations Part 1



CERT Basic Training Unit 3

Objectives

- Learn to provide immediate treatment for life threatening injuries in a disaster
- Introduction to basic first-aid
Burns, Amputations, Impaled Objects,
Nasal Injuries, Hypothermia,
Hyperthermia, Anaphylaxis, Fractures,
Sprains and Strains



Training for CERTs

- Identify and Treat life-threatening conditions in a disaster
 - Airway obstruction, bleeding, shock
- Treatment for other, less urgent conditions

*Provide greatest good for greatest number
in the shortest amount of time*

Safety Considerations

- Before treating , ensure both the patient and the rescuer are in a safe environment
- CERT volunteers must consider:
 - Do I feel safe at this spot?
 - Should I leave for a safer location?
 - If I leave, can I take anyone with me?

PPE – Personal Protective Equipment

- Helmet/Hard Hat
- Goggles or protective glasses
- N95 mask/KN95/KF94
- Work gloves
- Sturdy shoes or boots
- Non-latex exam gloves
- Safety Vest

Approach a Survivor

- Be sure survivor can see you
- Identify yourself
 - Your name and name of your organization
- Request permission to treat, if possible
- Respect cultural differences
- Respect Privacy
 - Do you have any medical conditions you want me to know?

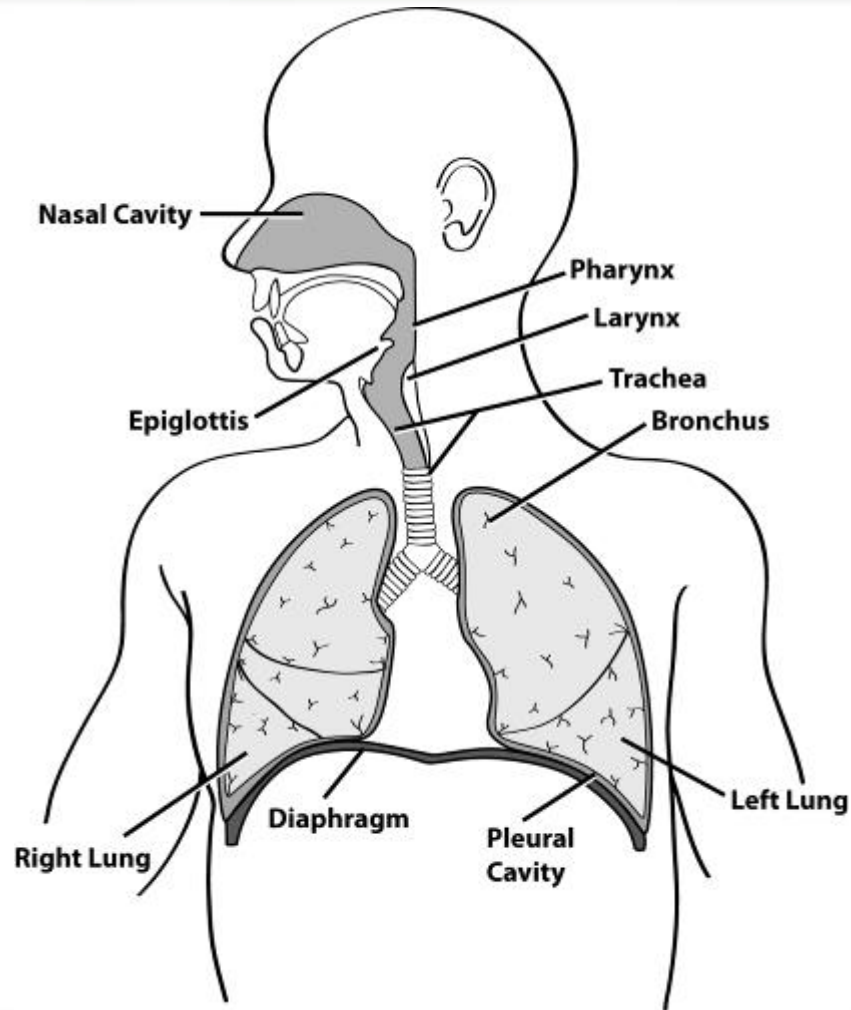


Three “Killers”

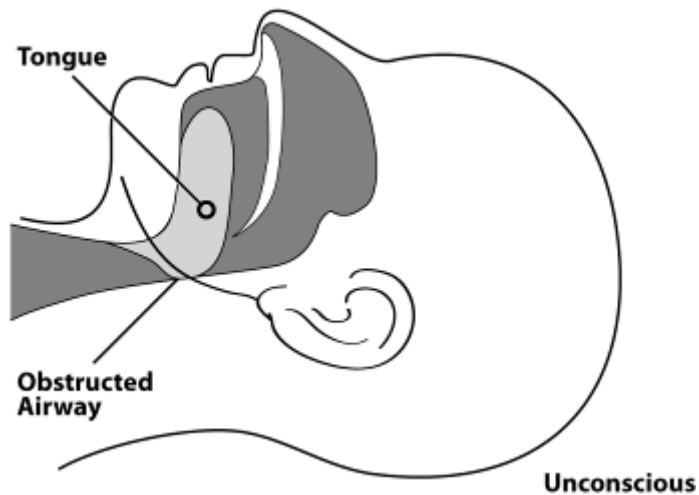
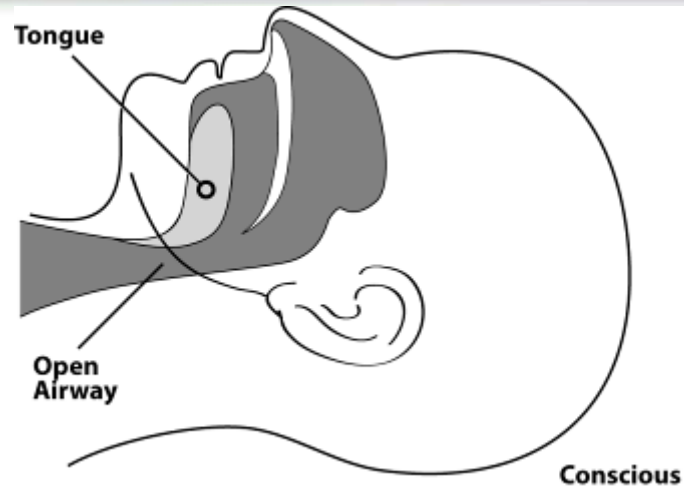
- Emergency medicine “killers”, the ABC’s
 - **A**irway obstruction
 - **B**leeding
 - Shock = **C**irculation Failure/ **O**xygenation

- First priority of medical operations:
 - Open airway
 - Control excessive bleeding
 - Treat for shock

Open the Airway



Open vs. Obstructed Airway

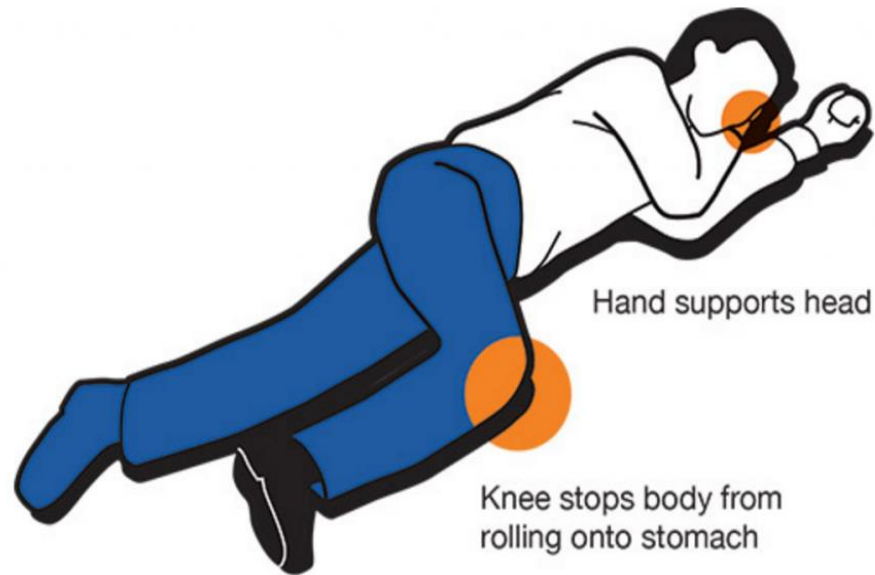


Head-Tilt/Chin-Lift Method



Exercise 3.1 Recovery Position

Keep the Airway Clear



Stay with person. If you must leave them alone at any point, or if they are unconscious, put them in this position to keep airway clear and prevent choking.

- 1) Unconscious person: Practice Head Tilt Chin Lift first
- 2) Conscious person: Introduce yourself & Ask for Permission to treat
- Practice Placing person in Recovery Position then switch and repeat.

Shock

- Result of **ineffective circulation of blood**
- Shock is progressive
- Remaining in shock will lead to **death** of:
 - Cells
 - Tissues
 - Entire organs



Common causes of shock

- Heart conditions (heart attack, heart failure)
- Heavy internal or external bleeding, such as from a serious injury or rupture of a blood vessel.
- Dehydration, especially when severe or related to heat illness.
- Infection (septic shock)
- Severe allergic reaction (anaphylactic shock)

Recognizing Shock

- Main signs of shock

Remember: 30-2-Can Do

- Rapid and shallow breathing, more than **30 per minute**
 - Capillary refill of greater than **2 seconds**
 - Failure to follow **simple commands**, such as “Squeeze my hand”
- Symptoms of shock are easily missed... pay careful attention to your patient!



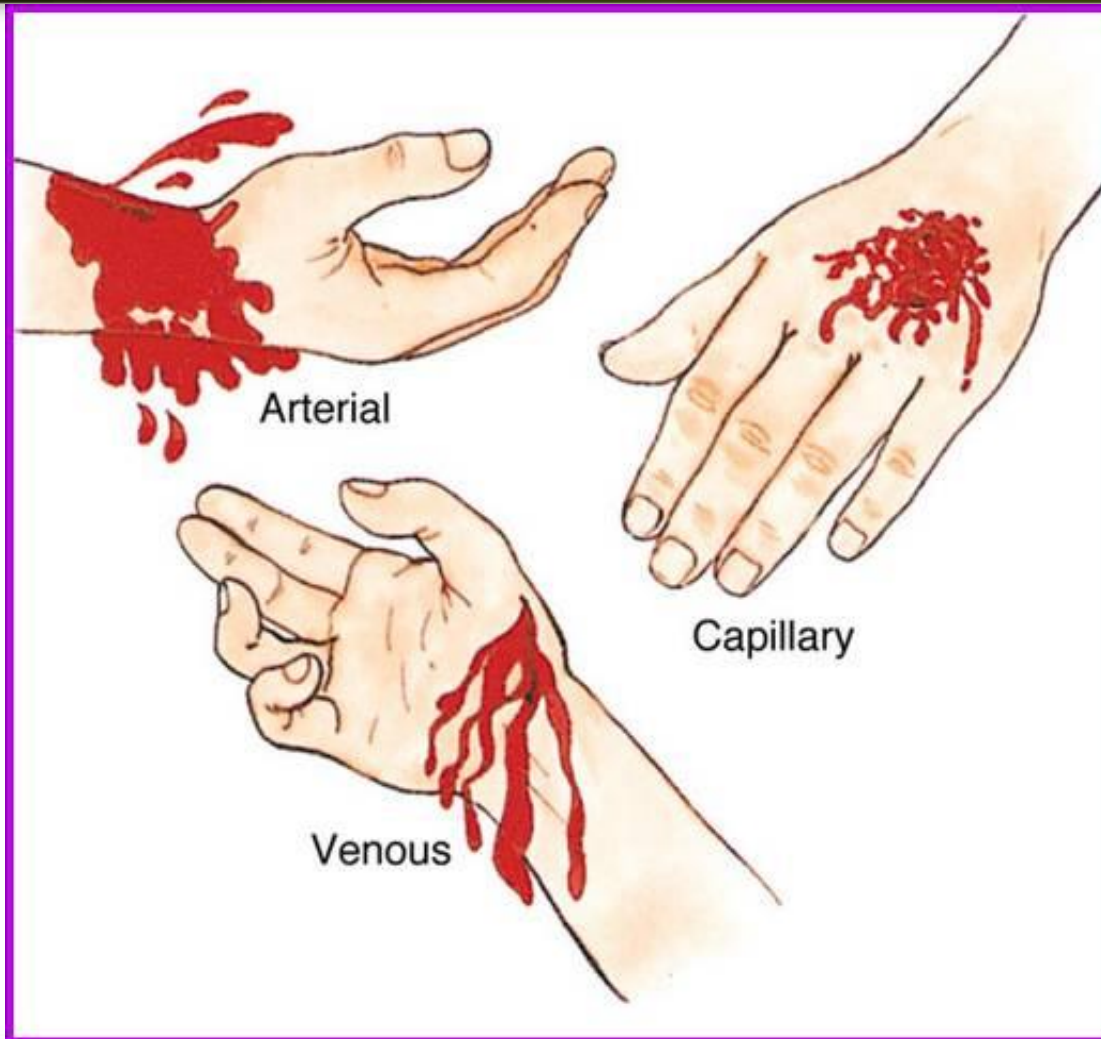
Maintaining Temperature & Circulation

- Keep the patient WARM
- Remove wet clothing
- Place something between patient and the ground
- Wrap patient with dry layers (*e.g.*, coat, blanket, Mylar emergency blanket, wool or down clothing (retains heat when wet))
- Elevate feet just 8-12 inches
- Shield from the wind!

Types of Bleeding - 1

- Arterial bleeding - Hi pressure, Hi oxygen
 - Bleeding from artery **spurts**
- Venous bleeding - Lo pressure, Lo oxygen
 - Bleeding from vein **flows**
- Capillary bleeding
 - Bleeding from capillaries **oozes**

Types of Bleeding - 2



Blood Loss

- How much blood in a person on average?
5 liters
- How much blood loss will be fatal?
40% or 2 liters
- The average time to lose that much blood after experiencing **serious** injury is only 3-5 minutes



Control Bleeding

3 main methods for controlling bleeding:

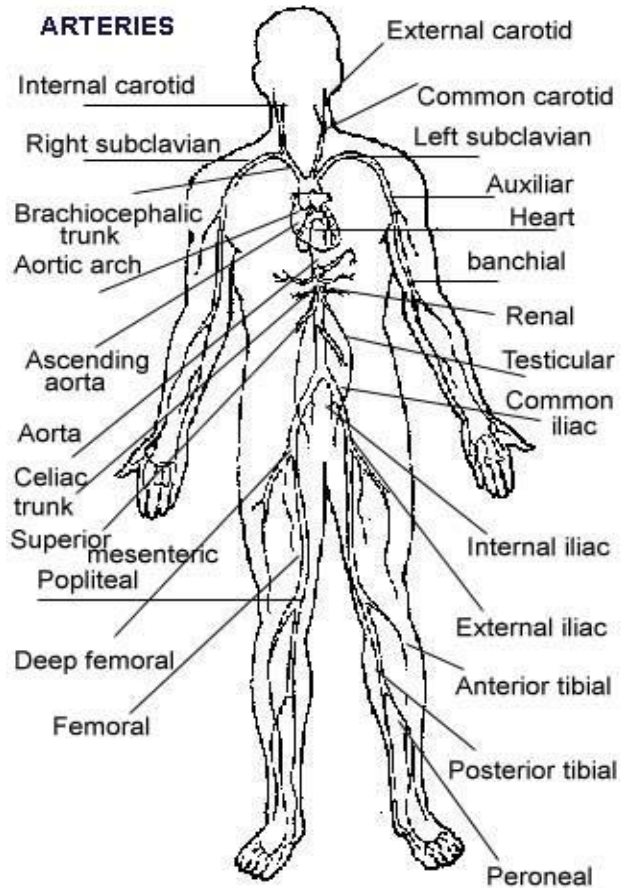
- Direct pressure, may hurt
- Elevation – above heart
- Pressure points

An additional method:

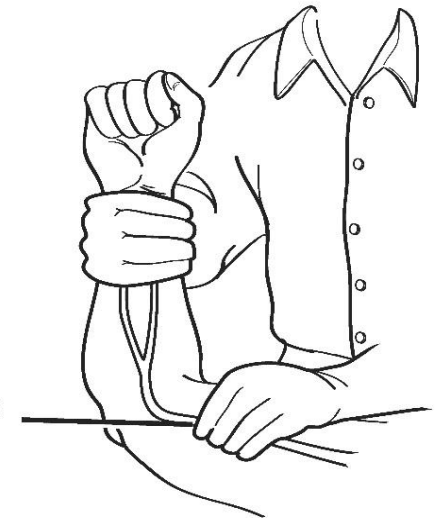
- Hemostatic gauze



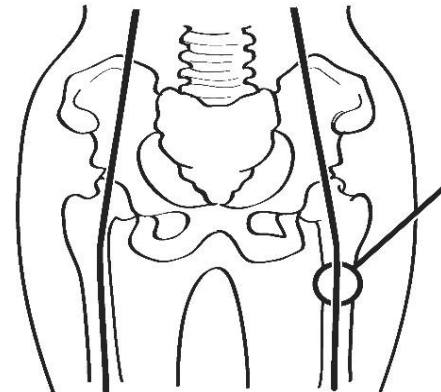
Pressure Points



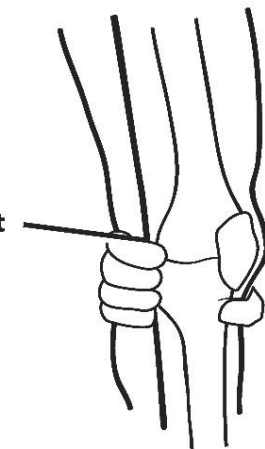
Brachial Pressure Point
just above the elbow



Femoral Pressure Point
in the Upper thigh



Popliteal Pressure Point
behind the knee



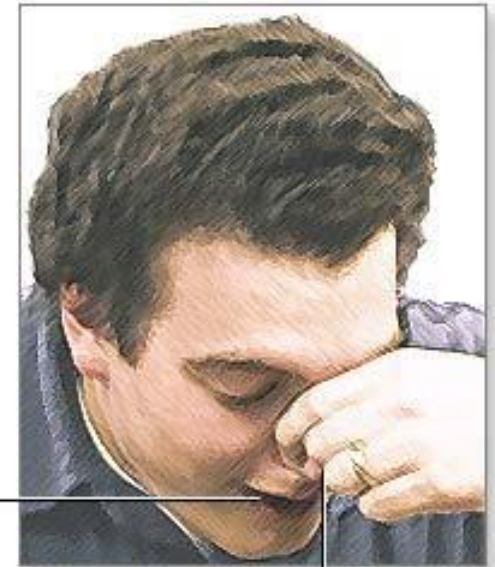
Nasal Injuries: Can be serious

- Causes
 - Blunt force to nose
 - Skull fracture
 - Non-trauma conditions, e.g., sinus infections, high blood pressure, and bleeding disorders
- Cautions
 - Large blood loss from nosebleed can lead to shock
 - Actual blood loss may not be evident because survivor will swallow some amount of blood

Treatment of Nasal Injuries

- Control nasal bleeding:
 - **Pinch nostrils** or put pressure on upper lip under nose
 - Have survivor sit with **head forward**, NOT back
- Ensure that airway remains open
- Keep survivor calm

Sit and lean forward slightly



Breath through
mouth

Pinch nostrils

ADAM.

Cleaning and Bandaging Wounds

- Clean by irrigating with clean, room temperature water
 - NEVER use hydrogen peroxide
 - Irrigate/flush but do not scrub
(use sterile saline or boiled water or contact lens solution)
- Apply dressing and bandage
 - Dressing applied directly to wound
 - Bandage holds dressing in place

Rules of Dressing

- If active bleeding:
 - Redress OVER existing dressing
- If no active bleeding:
 - Continue to monitor for signs of increased bleeding
 - Check for infection every 4-6 hours. Document any signs suggestive of infection.

Demo & Practice Removing Exam Gloves

REMOVING
GLOVES
SAFELY



Exercise 3.2

- Controlling Bleeding with Direct Pressure
 - Supplies: Gloves and Gauze
 - Use new gloves for each person treated
 - Apply Direct Pressure and Elevate above heart
 - Practice Correct Glove Removal

Severe, Uncontrolled Bleeding

- Bleeding that is not controlled by any other methods such as :
- Direct Pressure to wound,
- Elevation,
- Direct Pressure on Artery/ Pressure Points
- Application of Clotting materials
- Treatment of LAST RESORT would be a Tourniquet

Controlling Bleeding with a Tourniquet

- Place on injured limb as high as possible
- Pull strap through buckle
- Twist rod until bleeding stops/slows
- Secure rod
- If bleeding continues, place a second tourniquet
- Label date and time of application
- LEAVE in place until EMS takes over

Tourniquet Application Video



FEMA

CERT Basic Training
Unit 3: Disaster Medical Operations — Part 1

3-28



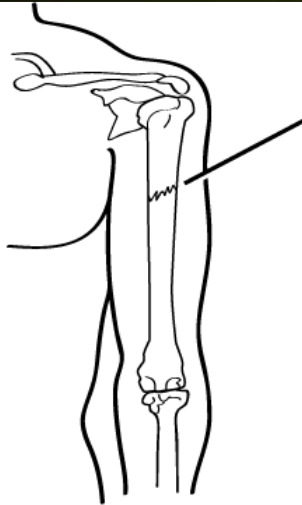
- Break for 10 minutes



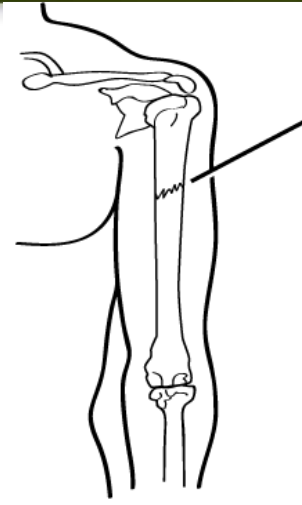
Fractures, Dislocations, Sprains, Strains

- **Immobilize** injury and **joints** immediately above and below injury site
- If uncertain of injury type, treat as fracture

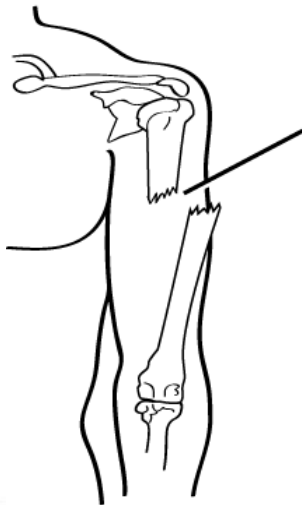
Types of Fractures



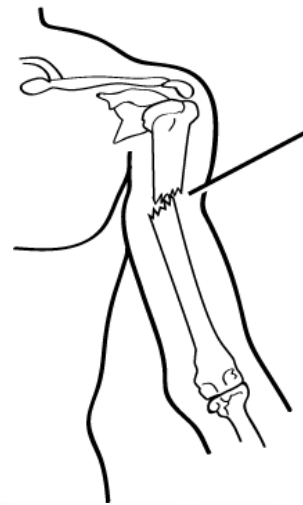
Closed Fracture
Closed Fracture in which the fracture does not puncture the skin.



Nondisplaced Fracture
Nondisplaced fracture, in which the fractured bone remains aligned.



Open Fracture
Open Fracture in which the bone protrudes through the skin.



Displaced Fracture
Displaced fracture in which the fractured bone is no longer aligned.



Treating Open Fractures

- Do not draw exposed bone ends back into tissue
- Do not irrigate wound, can infect it
- Cover wound with sterile dressing
- Splint fracture without disturbing wound
- Place moist dressing over bone end

Dislocations

- Dislocation is injury to ligaments around joint
 - So severe that it permits separation of bone from its normal position in joint
- Treatment
 - **Immobilize; do NOT relocate**
 - Check Pulse-Motor-Sensitivity (PMS) before and after splinting/ immobilization

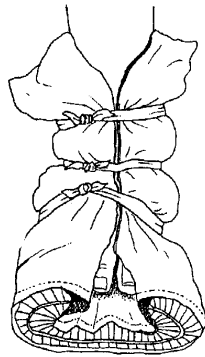
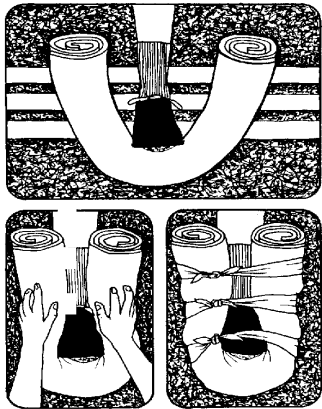
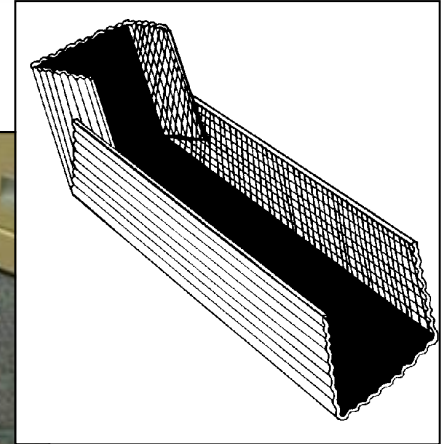
Signs of Sprain

- Tenderness at site
- Swelling and bruising
- Restricted use or loss of use



Damaged vessels from an ankle sprain can cause bruising

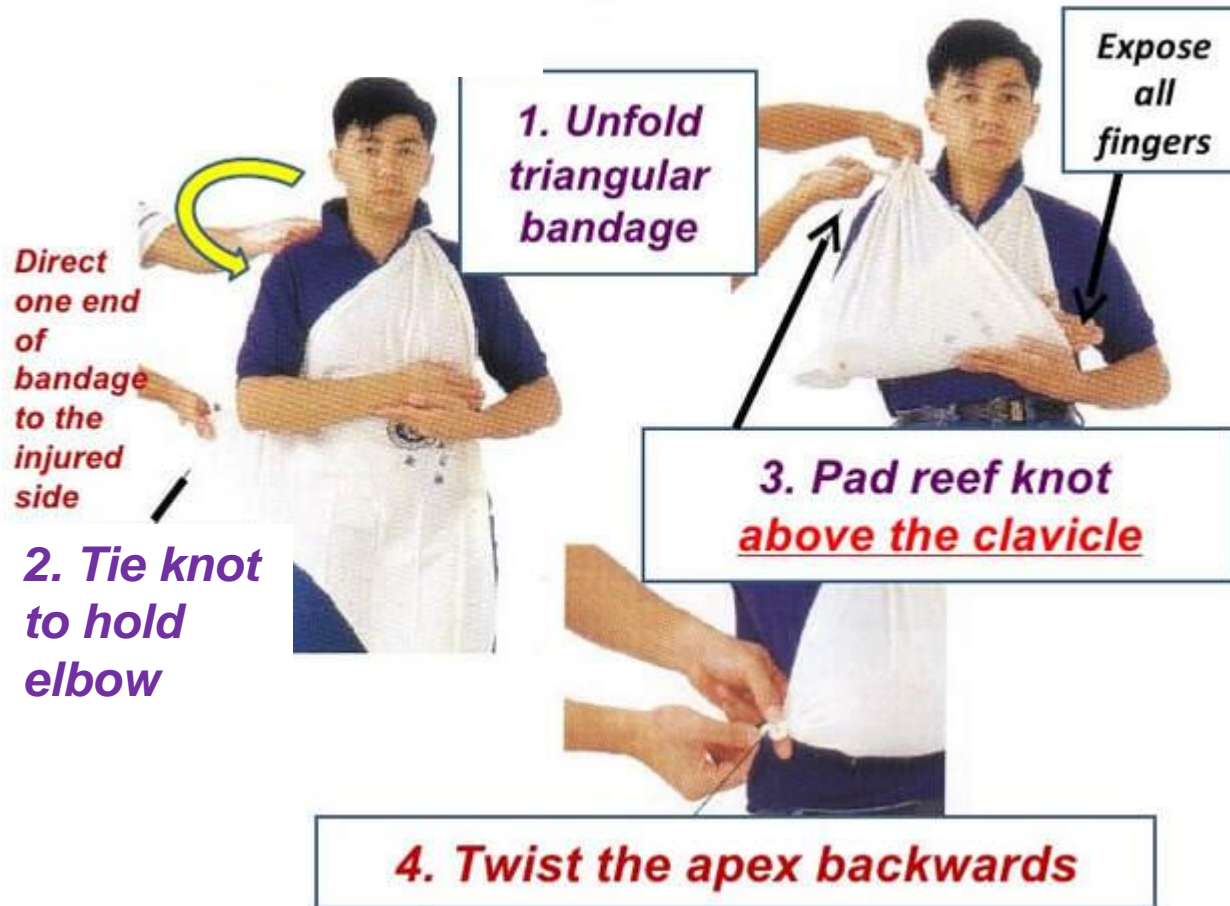
Splinting



Splinting Guidelines

1. Support injured area above and below injury
2. Assess PMS in extremity
3. Splint injury in position that you find it
4. Don't try to realign bones or joints
5. Fill voids to stabilize and immobilize
6. Immobilize joints above and below injury
7. After splinting, reassess PMS

Triangular Bandage



Exercise 3.3



- Practice Splinting a Limb

Class Break

- Break for 10 minutes

First Aid for CERT



FEMA

CERT Basic Training
Unit 3: Disaster Medical Operations — Part 1

3-40



Treating Burns

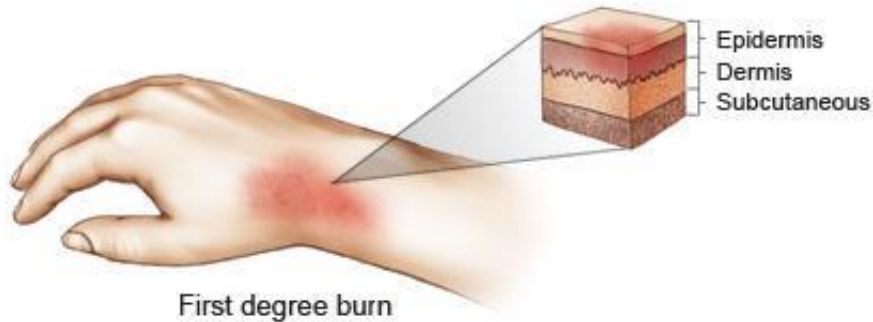
- Conduct thorough Size Up
 - What caused the burn?
 - Is the danger still present?
- Treat with First Aid
 - Cool burned area
 - Cover with sterile cloth to reduce risk of infection

Burn Severity

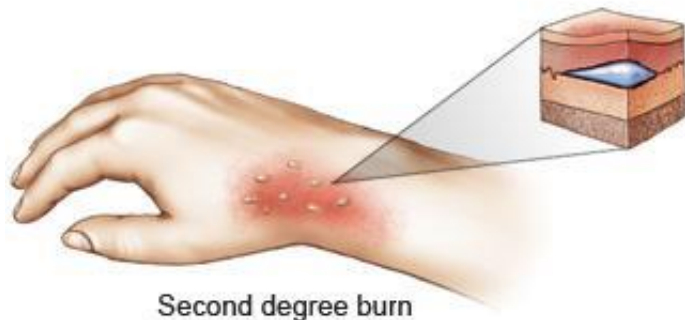
- Factors that affect burn severity:
 - Temperature of burning agent
 - Period of time survivor exposed
 - Area of body affected
 - Size of area burned
 - Depth of burn



Burn Classifications



1st degree: outer layer, red, no blisters



2nd degree: dermis, blisters, swollen



3rd degree: full thickness, charred or white

Burn Treatment: DOs

- When treating a burn survivor, DO:
 - Cool skin or clothing if they are still hot
 - Cover burn loosely with dry, sterile dressings to keep air/germs out, reduce pain, and prevent infection
 - Elevate burned extremities to decrease swelling
 - Remove potentially constricting jewelry

Burn Treatment: **DON'Ts**

- When treating a burn survivor,

DO NOT:

- Use ice (can damage tissues)
- Apply antiseptics, ointments, or other remedies (prevents skin grafts)
- Remove shreds of tissue, break blisters, or remove adhered/melted particles of clothing as this will tear tissues and injure further

Treatment for Chemical Burns

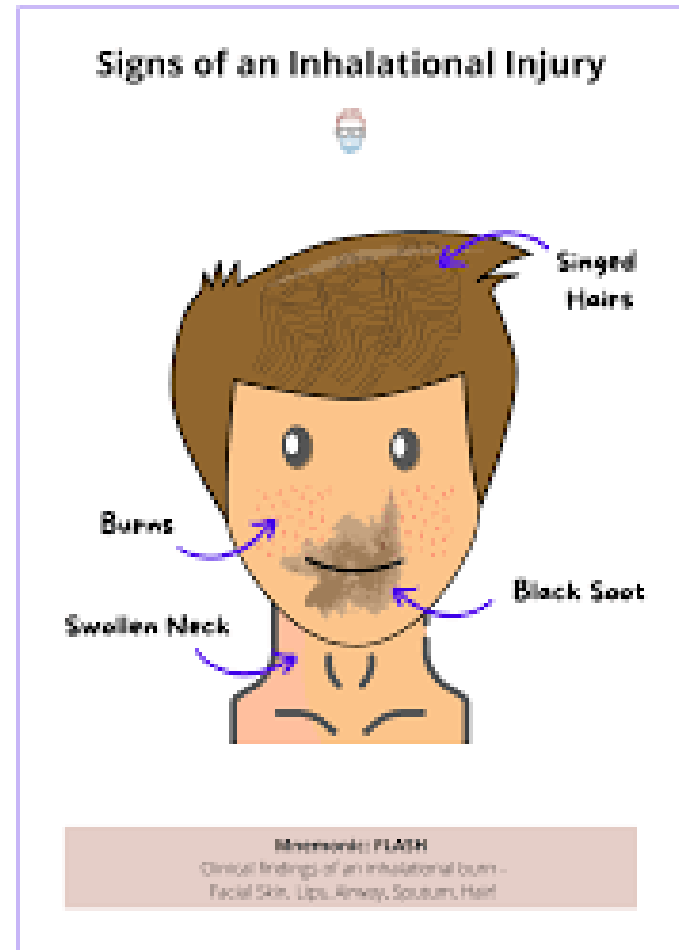
- Remove cause of burn + affected clothing/jewelry
- If irritant is dry, gently brush away as much as possible
 - Always brush away from eyes, survivor, and you
- Flush with lots of cool running water
- Apply cool, wet compress to relieve pain
- Cover wound loosely with dry, sterile or clean dressing
- Treat for shock if appropriate



Inhalation Burns Signs and Symptoms

Often from smoke or flame

- Sudden loss of consciousness
- Evidence of respiratory distress or upper airway obstruction
- Soot around mouth or nose
- Singed facial hair
- Burns around face or neck



Amputations

- Control bleeding; treat shock
- If amputated body part is found:
 - **Save tissue parts**, wrapped in clean material and placed in plastic bag
 - **Keep** tissue parts **cool**, but NOT directly on ice
 - **Keep** severed part **with survivor**
 - **Label** with patients' name

Impaled Objects

- When foreign object is impaled in patient's body:
 - **Immobilize** affected **body part**
 - **Do not try to remove** or move
 - Try to control bleeding at entrance wound
 - Clean and dress wound, making sure to **stabilize impaled object**

Cold-Related Injuries

- Hypothermia:
 - Occurs when body's entire core temperature drops below normal, can be lethal
 - Can be caused by immersion in ocean, bay, rivers
- Frostbite:
 - Occurs when extreme cold shuts down blood flow to extremities, causing *localized* tissue death due to **ice crystals in the tissues**
 - Not likely in East Bay



Cold Injury: Hypothermia

- Body temperature of 95° F or lower
- Redness or blueness of skin
- Numbness and shivering
- Slurred speech
- Unpredictable behavior
- Listlessness



Hypothermia Treatment

- Remove wet clothing
- Wrap survivor in blanket
- Protect survivor from weather
- Provide food and drink to conscious survivors
- **Do not attempt to massage** to warm body
- Place unconscious survivor in recovery position
- Place survivor in warm bath

Heat-Related Injuries: Can be Progressive

- **Heat cramps:**

- Muscle spasms brought on by over-exertion in extreme heat

- **Heat exhaustion:**

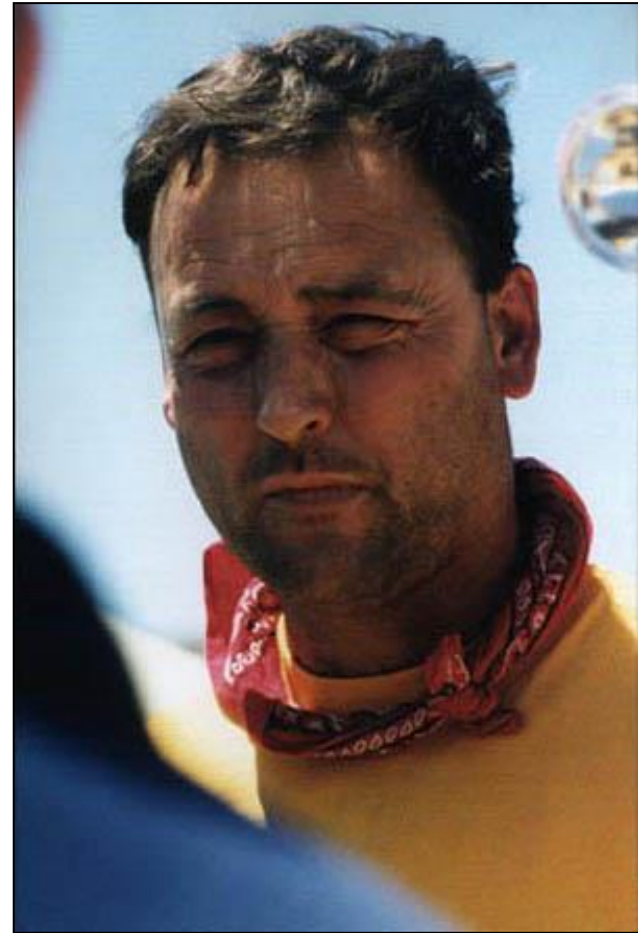
- Occurs when exercising or working in extreme heat results in loss of body fluids

- **Heat stroke:**

- Survivor's temperature control system shuts down
- Body temperature rises so high that brain damage and death may result

Symptoms of Heat Exhaustion

- Cool, moist, pale or flushed skin
- **Heavy sweating**,
Body is still trying to cope!
- Headache
- Nausea or vomiting
- Dizziness
- Exhaustion



Symptoms of Heat Stroke

- Hot, red skin
- Lack of perspiration, body is giving up
- Changes in consciousness
- Rapid, weak pulse and rapid, shallow breathing
- Death is imminent

Treatment of Heat-Related Injuries

- Remove from heat to cool environment
- Cool body slowly
- Have the survivor drink water, **SLOWLY**
- No food or drink if survivor is experiencing vomiting, cramping, or is losing consciousness

Anaphylaxis can be Life Threatening

- Check airway and breathing
- Calm individual
- Remove constrictive clothing and jewelry
- Find and help administer survivor's Epi-pen
- Watch for signs of shock and treat appropriately



Using an Epi-Pen



FEMA

4-58



Review: Using an Epi-Pen

- **Blue** to the Sky, **Orange** to the Thigh
- Remove safety cap
- Press firmly into **Upper Outer Thigh**
(**Avoid inner thigh** where femoral artery is located)
- It will make a loud noise
- Hold in for 3 seconds
- If 2 shots are prescribed/provided, wait 5 minutes & repeat if needed.
- NEVER use an adult epi-pen on a child.

Class Summary

- You should now be able to:
 - Identify 3 “killers”
 - Apply techniques for opening the airway, controlling bleeding, and treating for shock
 - Use splints
 - Understand basic first-aid care

