

CERT Basic Training

Unit 3: Disaster Medical Operations - Part 1



FEMA

Unit Objectives



1. Identify life-threatening conditions resulting from trauma including severe bleeding, low body temperature, and airway blockage
2. Apply correct life saving techniques
3. Provide basic first-aid care for non-life threatening injuries

Advanced Training



- Stop the Bleed (1½ hours)
- CPR/AED (4 hours)
- Or CPR/AED/First Aid (6-7 hours)
- Wilderness First Aid (20 hours) – requires CPR

Treating Life-Threatening Conditions



- Without treatment, severe bleeding and airway obstruction can quickly lead to death
- The first priority of CERT volunteers assisting in disaster medical operations is to attend to these conditions by controlling bleeding and positioning a patient so they can breathe

Safety Considerations



- Prior to treatment, ensure that both the patient and rescuer are in a safe environment to administer care
- Some questions CERT volunteers to consider
 - Do I feel safe at this spot?
 - Should I leave and move to a safer location, or am I able to stay and start providing care immediately?
 - If I leave, can I take anyone with me?

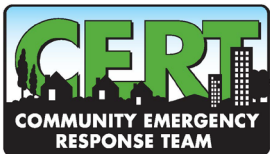
Approaching the Patient



- Be sure patient can see you
- Identify yourself
 - Your name and name of your organization
- Request permission to treat, if possible
- Respect cultural differences
- Protect patient privacy



PM 3-2



Life-Threatening Bleeding



- Indicators of life-threatening bleeding:
 - Spurting/steady bleeding
 - Blood is pooling
 - Blood is soaking through over lying clothes
 - Blood is soaking through bandages
 - Amputation

Stages of Severe Bleeding



Stage	Blood Loss	Heart Rate	Blood Pressure	Breath Rate	Patient
I	Less than 15%	Normal (<100 bpm)	Normal	14-20	Patient appears normal
II	15%-40%	Fast (>100 bpm)	Slightly Low	20-30	Patient may feel anxious
III	30%-40%	Very Fast (>120 bpm)	Low	30-40	Patient feels confused
IV	Greater than 40%	Critical (>140 bpm)	Critical	>35	Patient feels lethargic

PM 3-3



Types of Bleeding



- **Arterial bleeding:** Arteries transport blood under high pressure
 - Blood coming from an artery will spurt
- **Venous bleeding:** Veins transport blood under low pressure
 - Blood coming from a vein will flow
- **Capillary bleeding:** Capillaries also carry blood under low pressure
 - Blood coming from capillaries will ooze

Types of Bleeding



PM 3-3

Controlling Bleeding: Direct Pressure



- Step 1: Find the source(s)
- Step 2: Cover the source
- Step 3: Apply pressure
- Step 4: Maintain pressure until bleeding has stopped

Controlling Bleeding: Tourniquets



- Place on injured limb as high as possible
- Pull strap through buckle
- Twist rod until bleeding stops/slows
- Secure the rod
- If bleeding continues, place second tourniquet
- Leave in place until EMS takes over

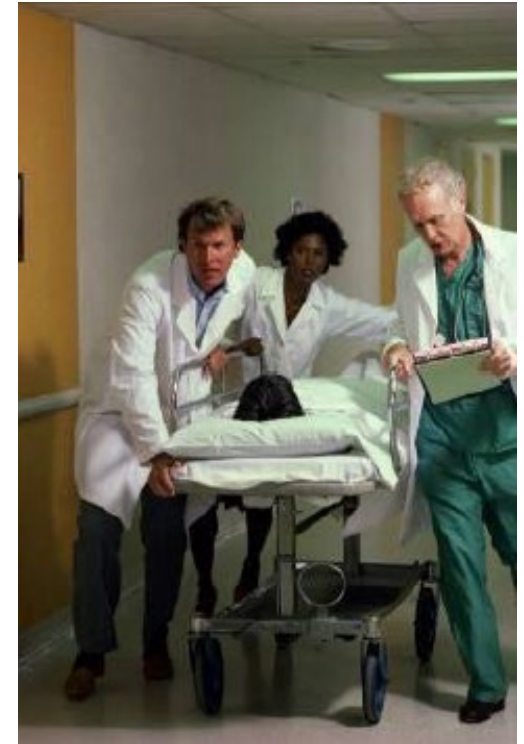


PM 3-4

Shock



- Body is not getting enough bloodflow
- Shock is often difficult to diagnose
- Main signs of shock:
 - Rapid and shallow breathing
 - Capillary refill of greater than two seconds
 - Failure to follow simple commands, such as “squeeze my hand”
- Symptoms of shock are easily missed. Pay careful attention to your patient



PM 3-5

Maintaining Body Temperature



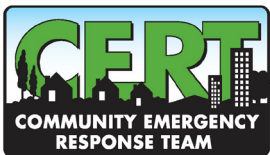
- Keep the patient warm
 - Remove wet clothing
 - Place something between patient and ground (e.g., cardboard, jacket, blanket)
 - Wrap patient with dry layers (e.g., coat, blanket, Mylar emergency blanket)
 - Shield patient from wind

Exercise 3.1

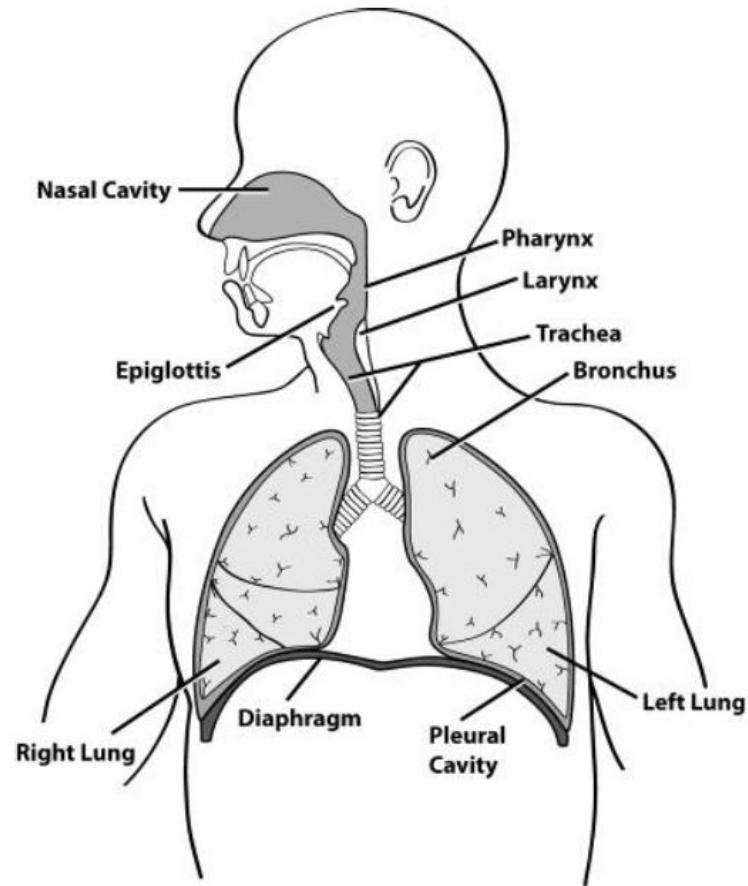


1. After breaking into pairs, identify one person to take the role of the patient and one to take the role of the rescuer
2. Respond as if the patient has an injury on the right forearm, just below the elbow
3. Apply a pressure bandage or tourniquet (if available)
4. Repeat the process twice
5. Swap roles and have the new rescuer complete the above steps

PM 3-6

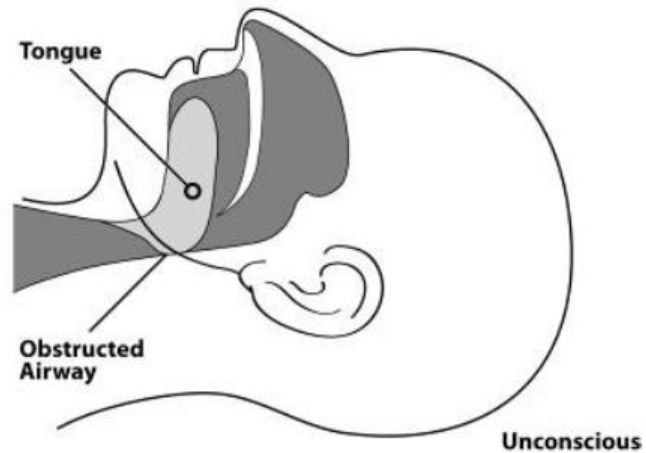
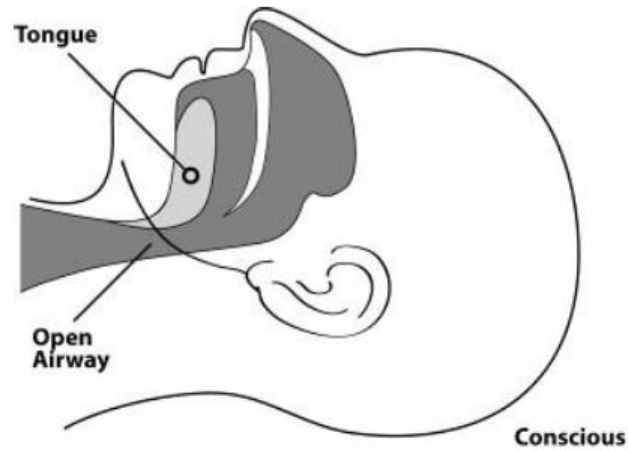


Opening the Airway



PM 3-6

Open vs. Obstructed Airway



PM 3-6

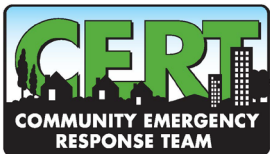


Jaw-thrust Maneuver



1. Kneel above the patient's head
2. Put one hand on each side of the patient's head with the thumbs near the corners of the mouth pointed toward the chin, using the elbows for support
3. Slide the fingers into position under the angles of the patient's jawbone without moving the head or neck
4. Thrust the jaw upward without moving the head or neck to lift the jaw and open the airway

PM 3-7

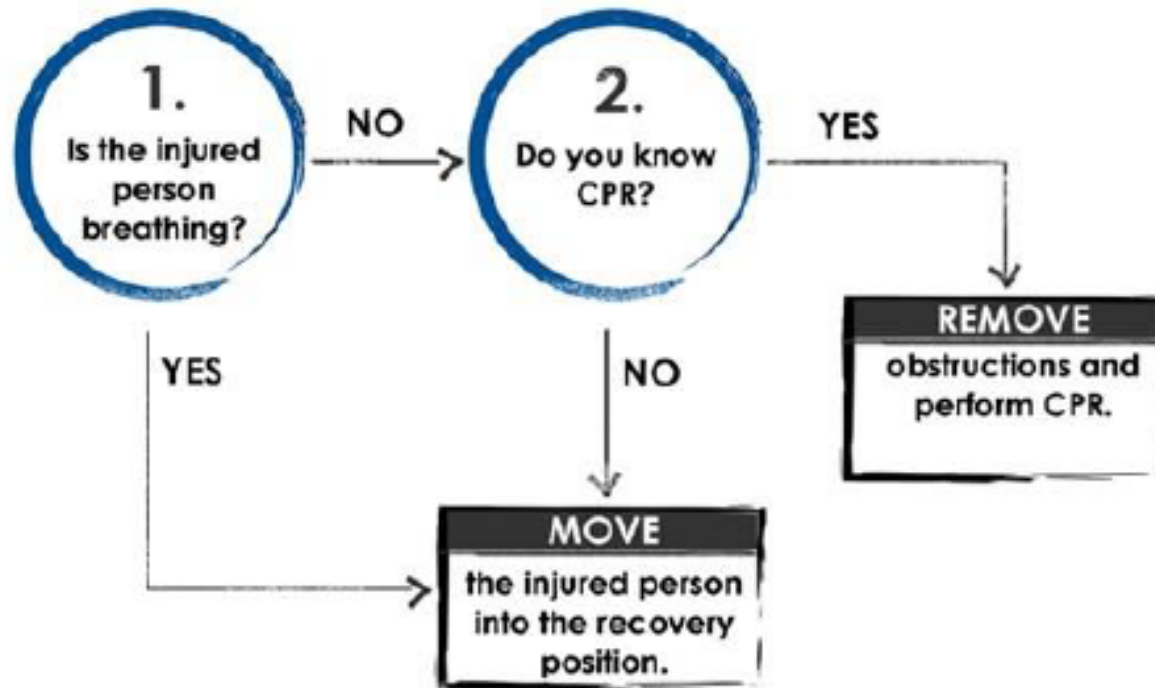


Positioning a Conscious Patient



- **When sitting on a raised platform**(e.g., chair, bench): Legs shoulder width apart, elbows or hands on knees, and leaning slightly forward
- **When standing:** Legs shoulder width apart, hands on knees arms straight, and leaning forward with flat back

Positioning an Unconscious Patient



Recovery Position



- **Body:** Laid on its side
- **Bottom Arm:** Reached outward
- **Top Arm:** Rest hand on bicep of bottom arm
- **Head:** Rest on hand
- **Legs:** Bent slightly
- **Chin:** Raised forward
- **Mouth:** Pointed downward

Exercise 3.2



1. Break into pairs and have one person play the rescuer and one person play the patient
2. Assume that the unconscious injured individual is breathing
3. Place them into the recovery position using the technique you just learned

Providing Comfort



- What can you do?
 - Keep them warm
 - Offer a hand to hold
 - Maintain eye contact
 - Be patient and understanding
 - If you have to move on to provide aid to another person, let them know

PM 3-8



Treating Burns



- Prevent hypothermia
- Manage pain
- 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



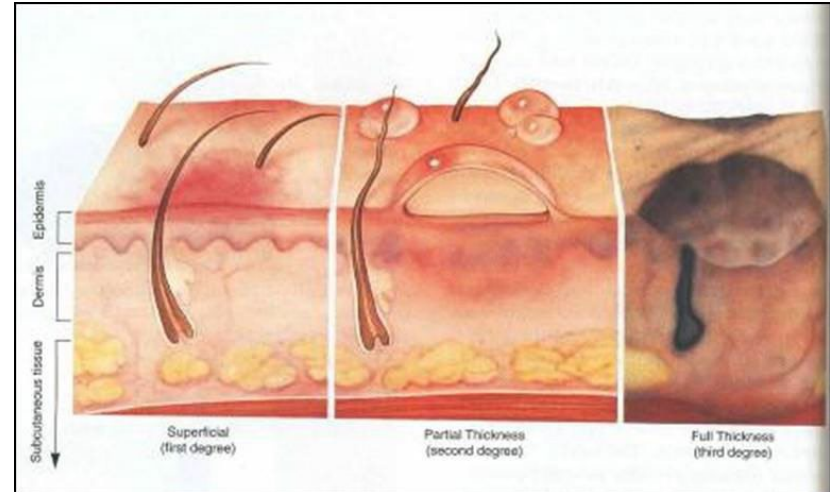
PM 3-9

Burn Classifications



Table 3.2: Burn Classification

Classification	Skin Layers Affected	Signs
Superficial	<ul style="list-style-type: none"> • Epidermis 	<ul style="list-style-type: none"> • Reddened, dry skin • Pain • Swelling (possible)
Partial Thickness	<ul style="list-style-type: none"> • Epidermis • Partial destruction of dermis 	<ul style="list-style-type: none"> • Reddened, blistered skin • Wet appearance • Pain • Swelling (possible)
Full Thickness	<ul style="list-style-type: none"> • Complete destruction of epidermis and dermis • Possible subcutaneous damage (destroys all layers of skin and some or all underlying structures) 	<ul style="list-style-type: none"> • Whitened, leathery, or charred (brown or black) • Painful or relatively painless



PM 3-9



Treatment for Chemical Burns



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



PM 3-10

Wound Care



- Main treatment for wounds:
 - Control bleeding
 - Apply dressing and bandage
- Apply dressing and bandage:
 - Apply dressing directly to wound
 - Bandage holds dressing in place



PM 3-11

Rules of Dressing



- If active bleeding:
 - Redress OVER existing dressing
- If no active bleeding:
 - Maintain the pressure and keep wound bandaged until further treatment by a medical professional

Signs of Infection



- Signs of possible infection:
 - Swelling around wound site
 - Discoloration
 - Discharge from wound
 - Red striations from wound site



PM 3-11

Amputations



- 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

Impaled Objects



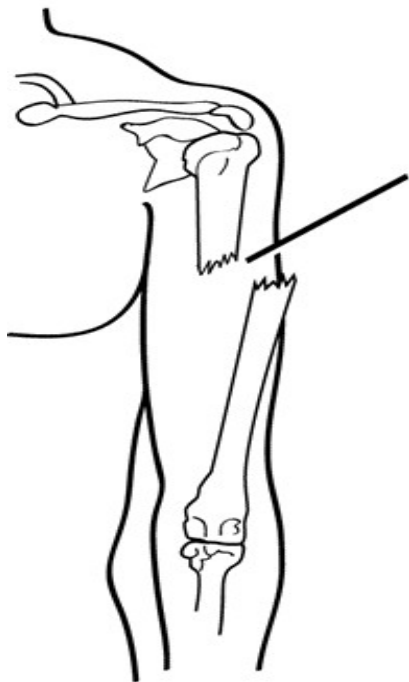
- When foreign object is impaled in patient's body:
 - Immobilize affected body part
 - Do not attempt to move or remove
 - Try to control bleeding at entrance wound
 - Clean and dress wound, making sure to stabilize impaled object

Fractures, Dislocations, Sprains, Strains



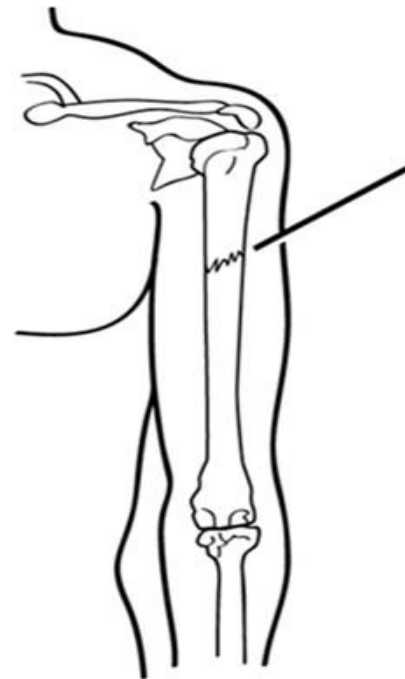
- Immobilize injury and joints immediately above and below injury site
- If uncertain of injury type, treat as fracture

Types of Fractures



Open Fracture

Open Fracture in which the bone protrudes through the skin.



Closed Fracture

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

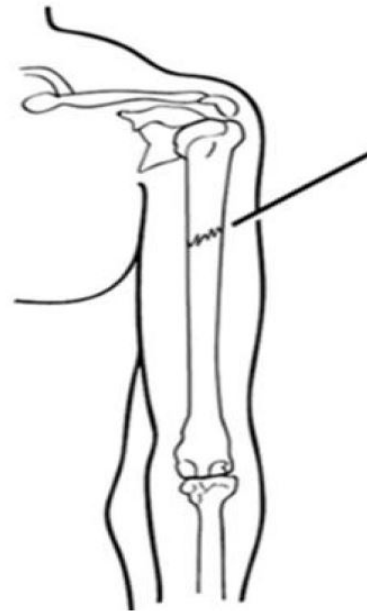
PM 3-12

Types of Fractures



Displaced Fracture

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



Nondisplaced Fracture

Nondisplaced Fracture in which the fractured bone remains aligned.

PM 3-13

Treating Open Fractures



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

Dislocations



- Dislocation is injury to ligaments around a joint
 - It is so severe that it permits separation of bone from its normal position in a joint
- Treatment:
 - Immobilize; do NOT relocate
 - Check Pulse, Movement, and Sensation (PMS) before and after splinting/immobilization

Signs of Sprain

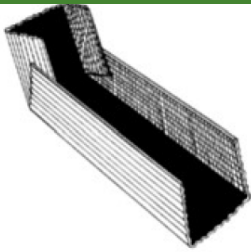


- Tenderness at site
- Swelling and bruising
- Restricted use or loss of use



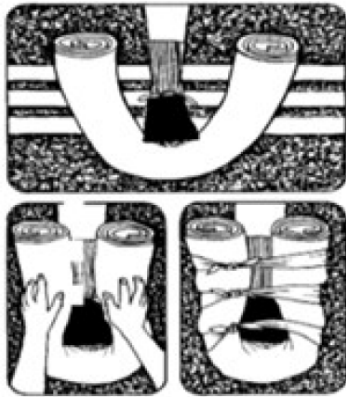
Damaged vessels
from an ankle sprain
can cause bruising

PM 3-14



Cardboard Splint

To create a cardboard splint, turn up the edges of the cardboard to form a “mold” in which the injured limb can rest.



Splint Using a Towel

To splint using a towel, roll up the towel and wrap it around the limb, then tie it in place.

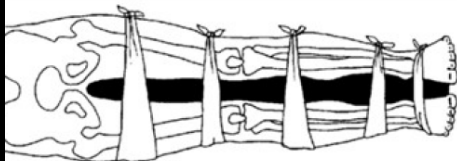
Pillow Splint

For a pillow splint, wrap and tie the pillow around the limb.



Anatomical Splint

For an anatomical splint, tie the injured leg at intervals to the non-injured leg, while using a blanket as padding between the legs.



Exercise 3.3: Splinting

Cold-Related Injuries



- Hypothermia:
 - Occurs when body's temperature drops below normal
- Frostbite:
 - Occurs when extreme cold shuts down blood flow to extremities, causing tissue death

Symptoms of Hypothermia



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



PM 3-16

Hypothermia Treatment



- Remove wet clothing
- Put something under the patient
- Wrap in dry layers
- Keep them sheltered and/or covered
- Do not attempt to use massage
- Place in the recovery position if unconscious

Symptoms of Frostbite



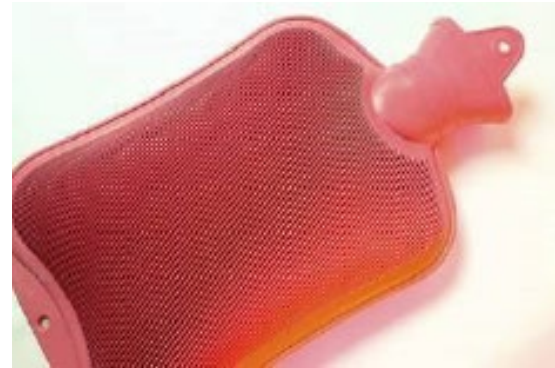
- Skin discoloration
- Burning or tingling sensation
- Partial or complete numbness



Frostbite Treatment



- Immerse injured area in warm (NOT hot) water
 - Warm slowly!
- Do not allow part to re-freeze
- Do not attempt to use massage
- Wrap affected body parts in dry, sterile dressing



PM 3-16

Heat-Related Injuries



- **Annual Heat Illness Prevention Training – MIP**
- **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

PM 3-17



Symptoms of Heat Exhaustion



- Cool, moist, pale or flushed skin
- Heavy sweating
- Headache
- Nausea or vomiting
- Dizziness
- Exhaustion



PM 3-17

Symptoms of Heat Stroke



- Hot, red skin
- Lack of perspiration
- Changes in consciousness
- Rapid, weak pulse and rapid, shallow breathing

Treatment of Heat-Related Injuries



- Remove from heat to cool environment
- Cool body slowly
- Have the heat exhaustion patient drink water, SLOWLY
- Do not provide food or drink to the patient if he or she is experiencing vomiting, cramping, or is losing consciousness

Treatment for Bites/Stings



- If bite or sting is suspected, and situation is non-emergency:
 - Remove stinger if still present by scraping edge of credit card or other stiff, straight-edged object across stinger
 - Wash site thoroughly with soap and water
 - Place ice on site for 10 minutes on and 10 minutes off

Anaphylaxis



- Calm the individual
- If possible, help patient use their Epi-pen
 - Many severe allergy sufferers carry one at all times
- Do not administer other medicine
 - This includes pain relievers, allergy medicine, etc.



PM 3-18

Unit Summary



- Life-saving measures CERT volunteers can take:
 - Control bleeding using direct pressure and/or a tourniquet
 - Maintain normal body temperature
 - Open airway and position patient correctly
- Other injuries that are common after disasters:
 - Burns
 - Wounds
 - Amputations and impaled objects
 - Fractures, dislocations, sprains, and strains
 - Cold-related injuries
 - Heat-related injuries
 - Insect bites/stings

PM 3-19



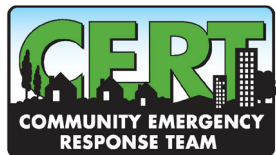
Homework Assignment



- Read unit to be covered in next session
- Wear appropriate clothes for next session

CERT Basic Training

Unit 4: Disaster Medical Operations – Part 2

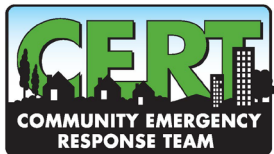


FEMA

Unit 3 Review



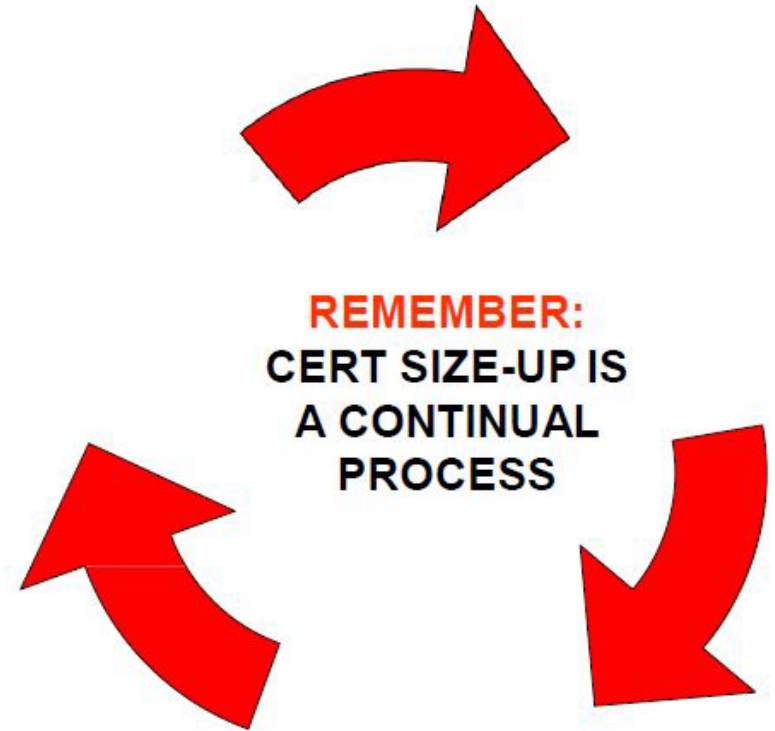
- Life-threatening conditions:
 - Severe bleeding
 - Low body temperature
 - Airway obstruction



CERT Size-up



- Gather Facts
- Assess Damage
- Consider Probabilities
- Assess Your Situation
- Establish Priorities
- Make Decisions
- Develop Plan of Action
- Take Action
- Evaluate Progress



PM 2-8



Unit Objectives



- Explain the role of the CERT volunteer during a mass casualty incident
- Describe the functions of disaster medical operations
- Describe how to set up survivor treatment areas
- Perform head-to-toe patient assessments
- Take appropriate sanitation and hygiene measures to protect public health

Mass Casualty Incidents



- Incidents in which the number of casualties overwhelms the local resources
 - Commuter train derailment
 - Multi-car accident
 - Bus accident
 - Building collapse
 - Natural disasters (e.g., tornadoes)

Role of First Responder Personnel



- During mass casualty events, first responder personnel will:
 - Establish command and control of the incident area
 - Conduct a scene size-up and set-up
 - Send survivors with relatively minor injuries to a holding area to await treatment
 - Identify survivors who require life-saving interventions and treat them immediately

Role of First Responder Personnel



- During mass casualty events, first responder personnel will also:
 - Identify deceased victims as well as survivors too severely injured to save
 - Manage medical transportation for survivors who require additional treatment
 - Secure the area to protect first responders, survivors, and evidence for law enforcement investigations
 - Remove debris and other safety or health threats

Role of CERT Volunteers



- Put on PPE and any CERT affiliated gear
- Locate the nearest first responder and identify yourself/give them your local agency affiliation
- If a first responder is not available, assess the situation and determine whether you can provide life-saving interventions

Role of CERT Volunteers



- Once responders have arrived, provide them with detailed information from your size-up. Ask how you may be of assistance
 - For your safety, first responders may ask you to leave the area. Report the incident and your role to your CERT Team Leader and local agency CERT affiliation
- Communication is key for supporting first responders

PM 4-2



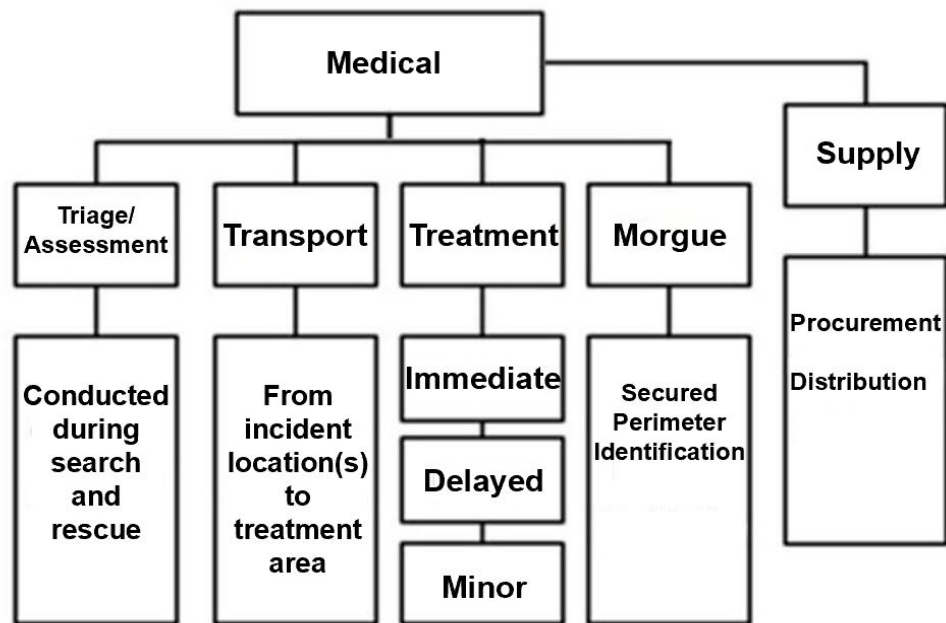
Triage



Functions of Disaster Medical Operations



Disaster Medical Operations Organization



PM 4-4



Establish a Medical Treatment Area



- Select site and set up treatment area as soon as injured survivors are confirmed
- When determining best location(s) for treatment area, consider:
 - Safety of rescuers and survivors
 - Ease of access to resources



PM 4-5



Medical Treatment Areas



- To help meet the challenge of limited resources, CERT may need to establish:
 - Decentralized Treatment Areas (more than one location)
 - Centralized Treatment Areas (one location)

Safety for Rescuers and Survivors



- In structures with light damage:
 - Assess survivors as they are found
 - Further medical treatment is performed in a safe location inside the designated treatment area
- In structures with moderate damage:
 - Assess survivors as they are found
 - Survivors are sent to a medical treatment area a safe distance from the incident

Individual safety is the number one priority

PM 4-5



Head-to-Toe Assessment



- Objectives of head-to-toe assessment:
 - Determine extent of injuries
 - Determine type of treatment needed
 - Document injuries

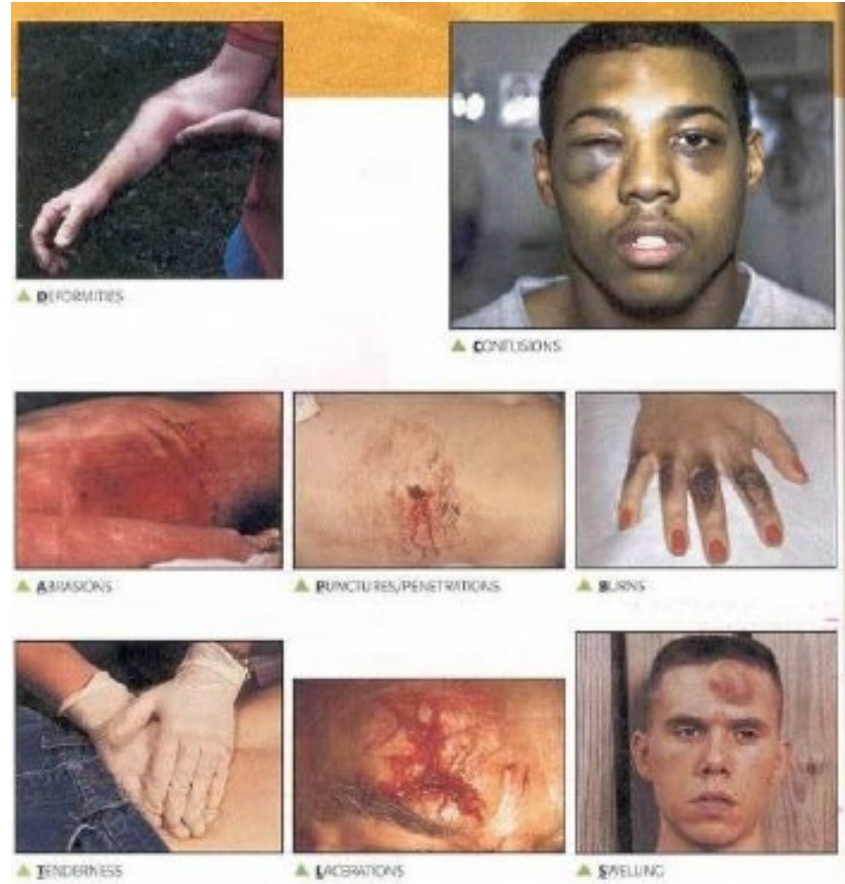


PM 4-7

DCAP-BTLS



- Deformities
- Contusions
- Abrasions
- Punctures
- Burns
- Tenderness
- Lacerations
- Swelling



PM 4-8

Conducting Head-to-Toe Assessment



- Pay careful attention
- Look, listen, and feel
- Suspect a spinal injury in unconscious survivors and treat accordingly
- Check own hands for patient bleeding

Order of Assessment



1. Head
2. Neck
3. Shoulders
4. Chest
5. Arms
6. Abdomen
7. Pelvis
8. Legs



PM 4-8

Head to Toe



- Head to Toe
 - Demonstration
 - Practice
 - Glove Removal (Together)

Closed-Head, Neck, Spinal Injuries



- If injuries to the head or spine are suspected, **do no harm**
 - Minimize movement of head and neck while treating life-threatening conditions
- If survivors exhibit signs or are found under heavy debris, treat them as having a closed-head, neck, or spinal injury

Public Health Considerations



- Maintaining proper hygiene
- Maintaining proper sanitation
- Purifying water (if necessary)
- Preventing spread of disease



PM 4-11

Maintaining Hygiene



- Wash hands frequently
 - Or use alcohol-based hand sanitizer
- Wear non-latex exam gloves
- Keep dressings sterile
- Wash areas that come in contact with body fluids



PM 4-11

Maintain Sanitation



- Control disposal of bacterial sources
- Put waste products in plastic bags
 - Tie off bags and mark them as medical waste
- **Do not** bury human waste – Twin Bucket System
EmergencyToilet.org

Water Purification Methods



- Boil water for 1 minute
- Water purification tablets
- Non-perfumed liquid bleach
 - 8 drops/gal of water
 - 16 drops/gal if water is cloudy
 - Let stand for 30 minutes before use



PM 4-12

Unit Summary



- During a mass casualty incident, CERT volunteers should:
 - Identify self as Trained First Aid Volunteer and give agency affiliation
 - Assess and provide life-saving interventions
 - Provide responders with detailed informationCommunication is key
 - First responders may establish a central treatment location or multiple at different incident sites
- Treatment areas will take into consideration safety and access to resources

PM 4-13



Unit Summary Cont'd



- Head-to-toe assessments should be:
 - Hands-on and verbal
 - Conducted in the same way each time
- To safeguard public health, maintain proper hygiene and sanitation, and purify water

Homework Assignment



- Practice complete head-to-toe assessment on friend or family member

PM 4-13

