Portland NET Basic Training

Unit 3: Disaster Medical Operations - Part 1

Unit Objectives

- Identify life-threatening conditions resulting from trauma including severe bleeding, low body temperature, and airway blockage
- Apply correct life saving techniques
- Provide basic first-aid care for non-life threatening injuries
- **Practice Recover Position**

Advanced Medical Training

- At your FFE: Stop the Bleed (50 minutes)
- CPR/AED (3½ hours)
- Or CPR/AED/First Aid (7½ hours)
- Wilderness First Aid (20 hours) – requires current CPR certification

Treating Life-Threatening Conditions

- Without treatment, severe bleeding and airway obstruction can quickly lead to death
- The first priority of NET 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 NET 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

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

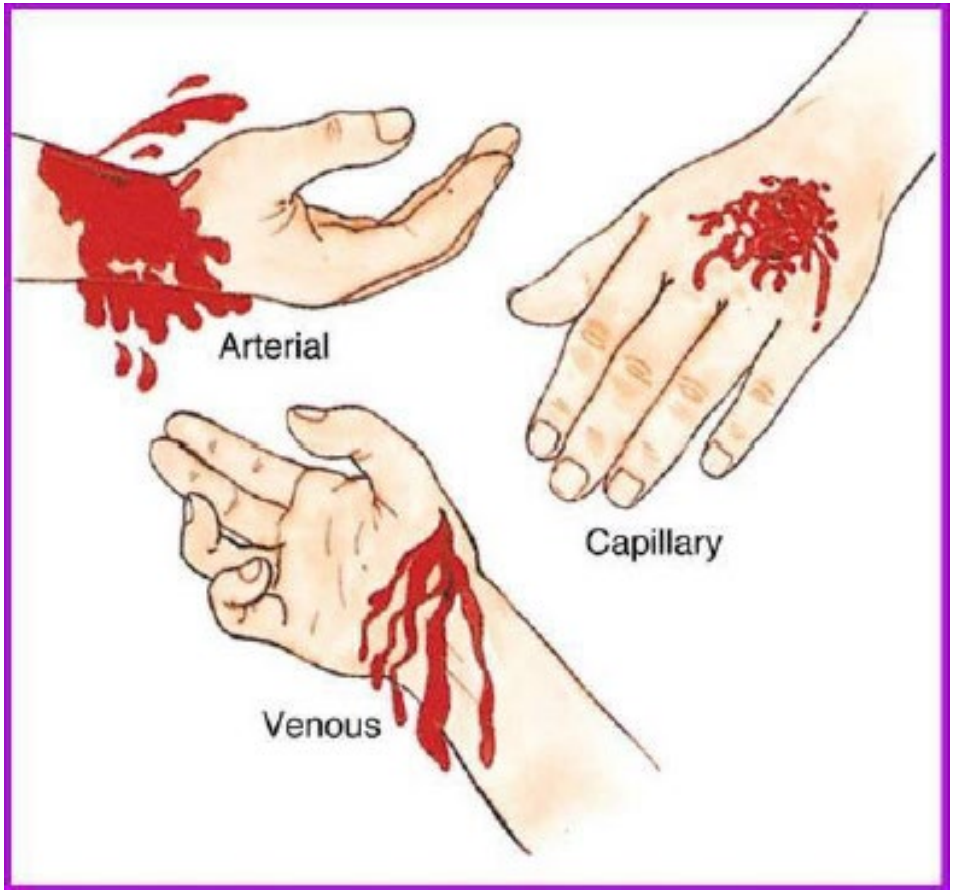
Stages of Severe Bleeding

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

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



Controlling Bleeding: Direct Pressure

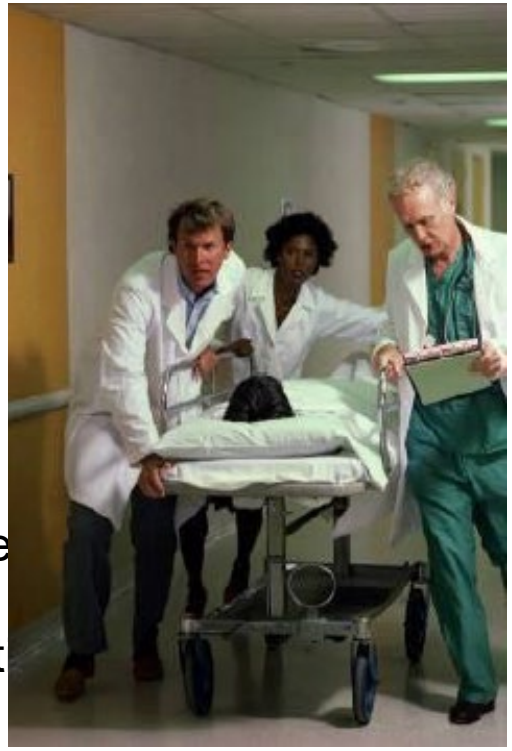
- Step 1: Find the source(s)
- Step 2: Cover the source
- Step 3: Apply pressure
- Step 4: Maintain pressure until bleeding has stopped

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

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
- Symptoms of shock are easily missed. Pay careful attent



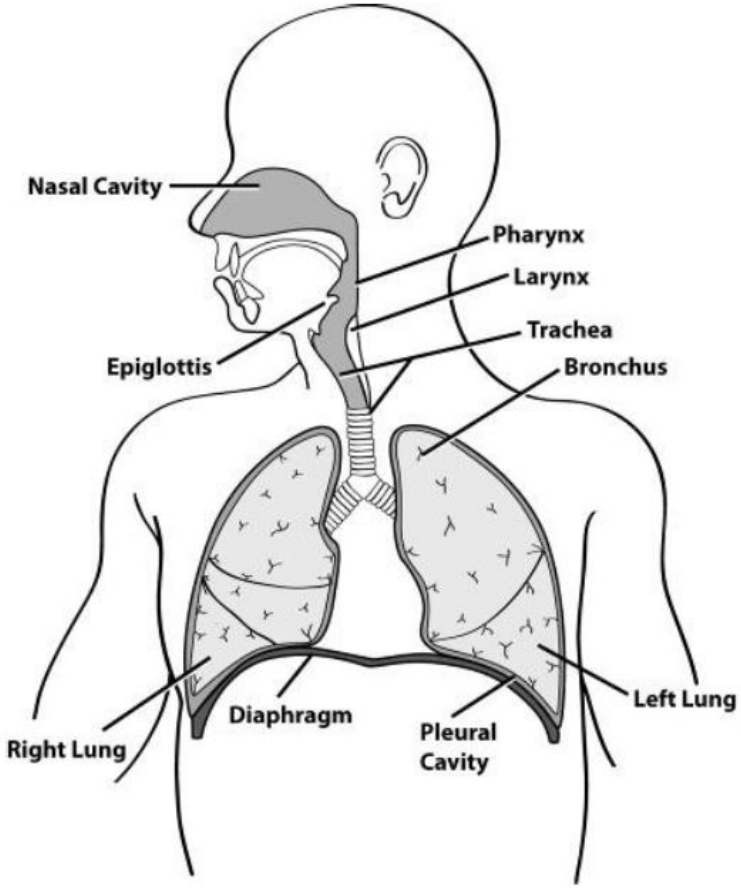
Maintaining Body Temperature

- 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

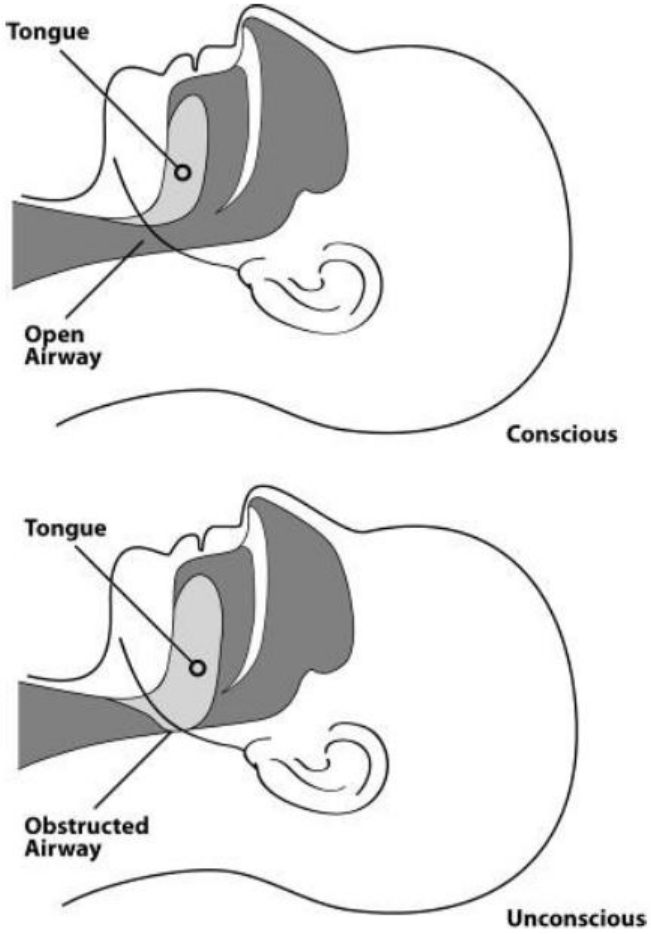
Exercise 3.1 – At Final Field Exercise

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

Opening the Airway



Open vs. Obstructed Airway



Jaw-thrust Maneuver

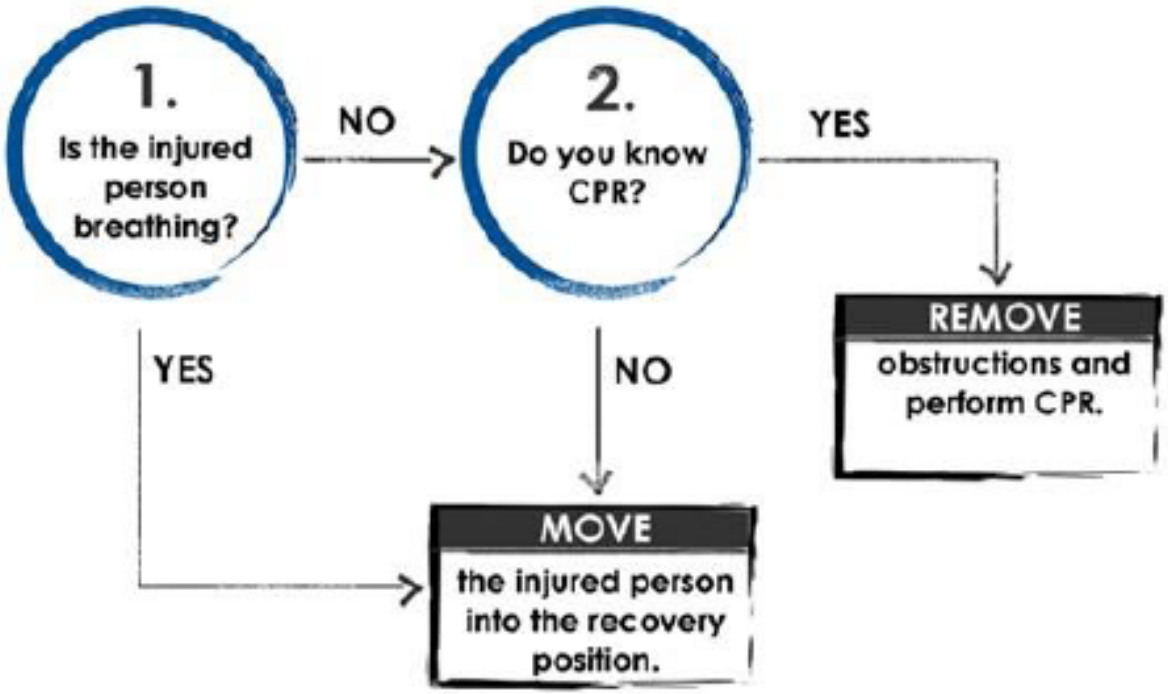
1. Kneel above the patient's head
2. Put one hand on each side of the patient's head with the thumbs near the corners of the mouth pointed toward the chin, using the elbows for support
3. Slide the fingers into position under the angles of the patient's jawbone without moving the head or neck
4. Thrust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

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 Video

Recovery Position

- **Body:** Laid on its side
- **Bottom Arm:** Reached upward
- **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

- Break into pairs and have one person play the rescuer and one person play the patient
- Assume that the unconscious injured individual is breathing
- 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 must move on to provide aid to another person, let them know

Treating Burns

- Prevent hypothermia
- Manage pain
- Reduce risk of infection

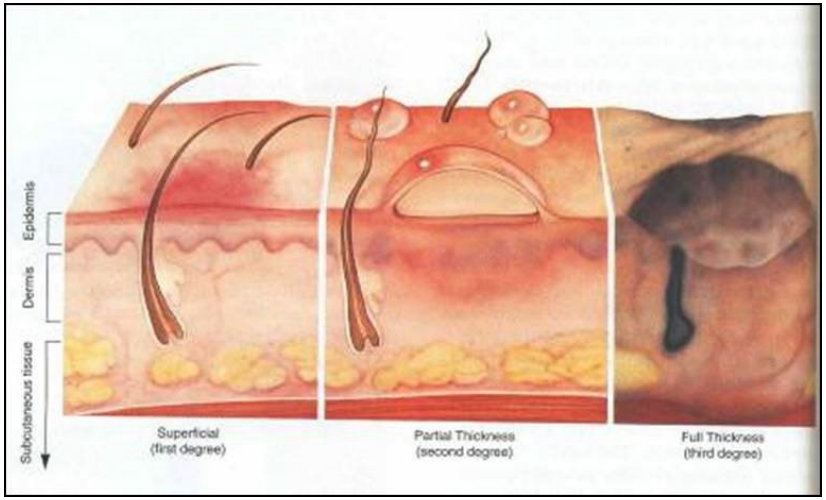
Burn Severity

- 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

Burn Classifications

Table 3.2: Burn Classification

Classification	Skin Layers Affected	Signs
Superficial	• Epidermis	• Reddened, dry skin • Pain • Swelling (possible)
Partial Thickness	• Epidermis • Partial destruction of dermis	• Reddened, blistered skin • Wet appearance • Pain • Swelling (possible)
Full Thickness	• Complete destruction of epidermis and dermis • Possible subcutaneous damage (destroys all layers of skin and some or all underlying structures)	• Whitened, leathery, or charred (brown or black) • Painful or relatively painless



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

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

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

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 with name

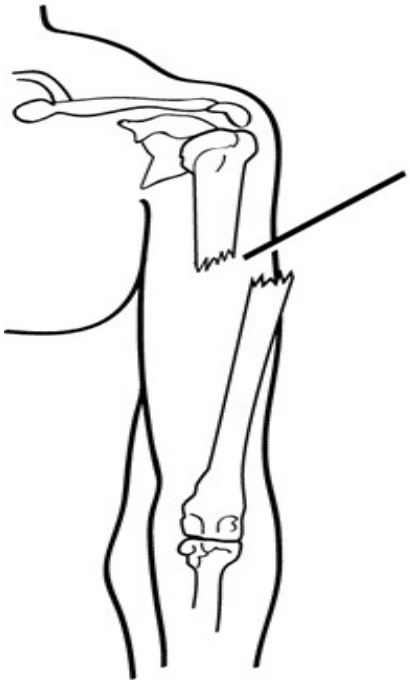
Impaled Objects

- 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

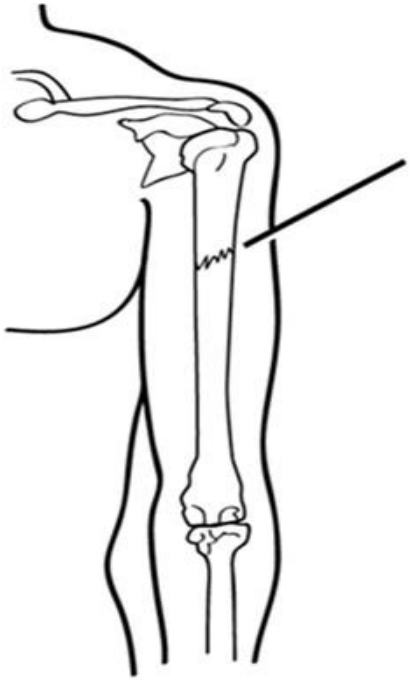
Fractures, Dislocations, Sprains, Strains

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

Types of Fractures



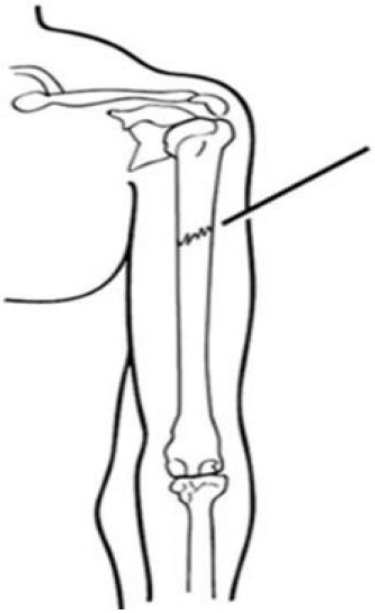
Open Fracture
Open Fracture in which the bone protrudes through the skin.



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

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.

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 – if patient must be moved
- Place moist dressing over bone end

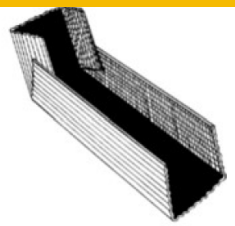
Dislocations

- 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

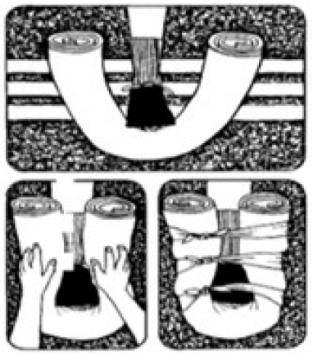
Splinting



Illustrations in the Participant Manual.

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

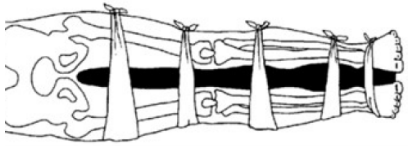
To splint using a towel, roll up the towel and wrap it around the limb, then tie it in place.

Pillow Splint

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

Anatomical Spline

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

Later stages:

- Slurred speech
- Unpredictable behavior
- Listlessness

Hypothermia Treatment

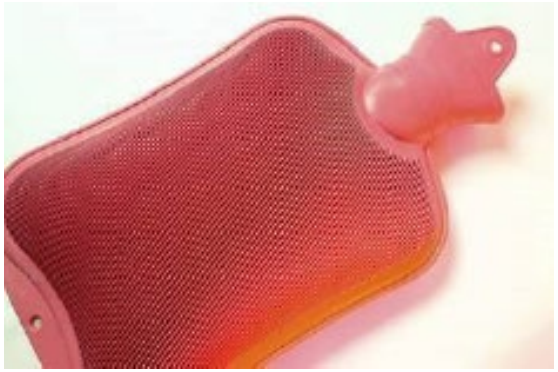
- Remove wet clothing
- Put something under the patient
- Wrap in dry layers
- Keep them sheltered and/or covered
- Do not attempt to use massage
- Place in the recovery position if unconscious

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



Heat-Related Injuries

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

Heat Exhaustion vs. Heat Stroke

Heat Exhaustion	Heat Stroke
Faint or dizzy	Throbbing headache
Excessive sweating	Confused, may lose consciousness
Rapid, weak pulse	Rapid, strong pulse
Nausea or vomiting	Nausea or vomiting
Cool, pale, clammy skin	Body temperature above 103°
Muscle cramps	Red, hot skin

Help the person get to a cooler, air conditioned place. Encourage them to drink water if they're fully conscious.

Call 911.
Get the person cool rapidly by laying them in cool water or dousing them with it.

Oregon Health Authority

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 EpiPen
  - Many severe allergy sufferers carry one at all times
  - NETs do not *administer* EpiPens. Why?
- Do not administer other medicine
  - This includes pain relievers, allergy medicine, etc.

Unit 3 Summary

- Life-saving measures NET 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

Portland NET Basic Training

Unit 4: Disaster Medical Operations - Part 2

Unit 3 Review

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

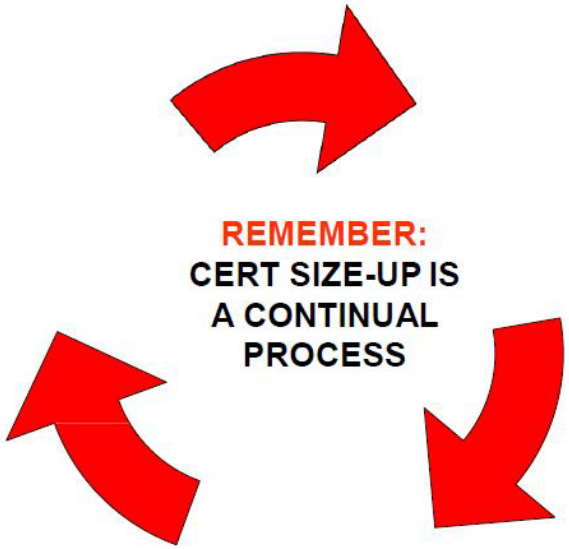
Scene Size-up

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

THINK

PLAN

ACT



Unit Objectives

- Explain the role of the NET volunteer during a mass casualty incident
- **Practice Ten Second Triage (TST)**
- 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 crash
  - Bus crash
  - Building collapse
  - Natural disasters (e.g., tornadoes)
  - Human-caused incidents

Role of First Responder Personnel (1/2)

- 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 (2/2)

- 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 NET Volunteers (1/2)

- Put on PPE and any NET affiliated gear
- Locate the nearest first responder and identify yourself/tell 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 NET Volunteers (2/2)

- 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 NET Team Leader and PBEM
- Communication is key for supporting first responders

Triage

- Treatment for life-threatening conditions
  - Airway obstruction, bleeding
- Treatment for other, less urgent conditions

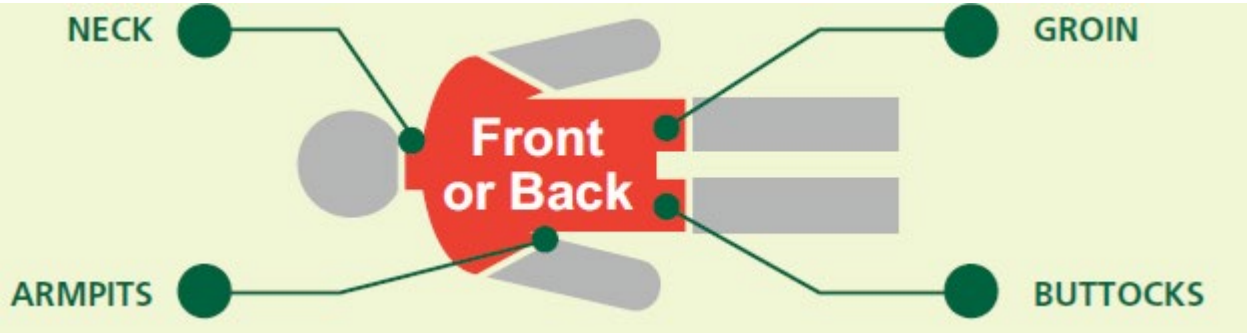
Do the greatest good for the greatest number
by conducting simple triage
and rapid treatment

TST – Ten Second Triage

- Ten Second Triage
- Walking
- Bleeding
- Talking
- Penetrating Injury Check
- Breathing

TST – Ten Second Triage

- Neck
- Chest
- Armpits
- Abdomen
- Back
- Groin
- Back
- Buttocks



Three “Killers”

- Emergency medicine “killers”
  - Airway obstruction
  - Bleeding
  - Shock
- First priority of medical operations:
  - Open airway
  - Control excessive bleeding
  - Treat for shock

What is Triage?

- Process for managing a mass casualty event
  1. Victims are evaluated
  2. Victims are sorted by urgency of treatment needed
  3. Victims are set up for immediate or delayed treatment

Triage Categories

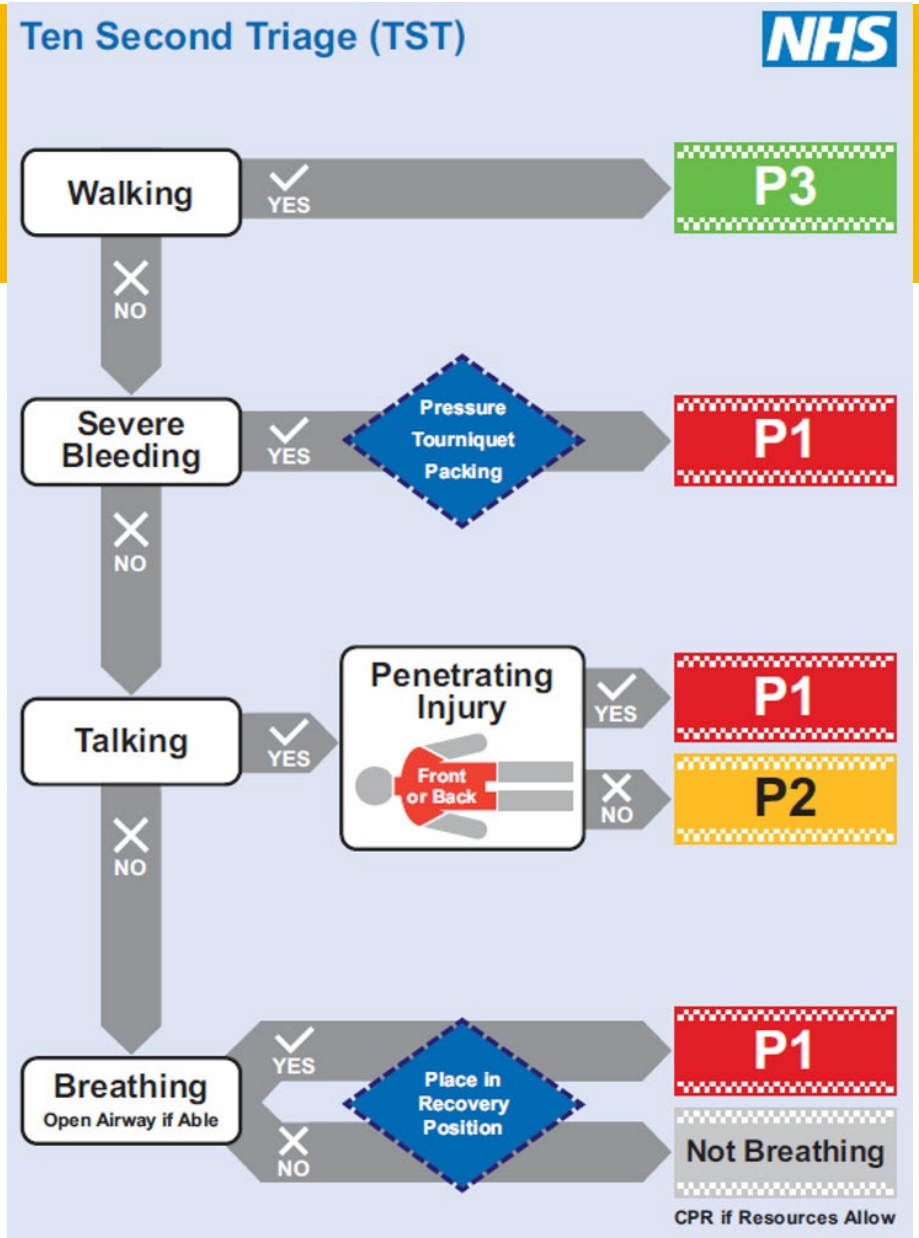
- P1 (Red): Has life-threatening injuries (airway, bleeding, or unresponsive)
- P2 (Yellow): Injuries do not jeopardize victim's life; treatment can be delayed
- P3 (Green): Walking wounded and generally ambulatory
- Not Breathing (Gray): No respiration after two attempts to open airway

Triage Process

1. Stop, Look, Listen, and Think
2. Conduct voice triage
3. Start where you stand; follow a systematic route
4. Evaluate each victim and tag. *How?*
5. Perform life-saving interventions (LSI) immediately
6. Document triage results

Life-Saving Interventions (LSI)

- Stop major bleeding (Tourniquet, Packing, Direct Pressure)
- Open airway
- Recovery position


Ten Second Triage (TST)
NHS
Walking
YES
P3
NO
Severe Bleeding
YES
Pressure
Tourniquet
Packing
P1
NO
Talking
YES
Penetrating Injury
Front or Back
YES
P1
NO
P2
NO
Breathing
Open Airway if Able
YES
Place in Recovery Position
P1
NO
Not Breathing
CPR if Resources Allow

Ten Second Triage (TST)

Triage Practice

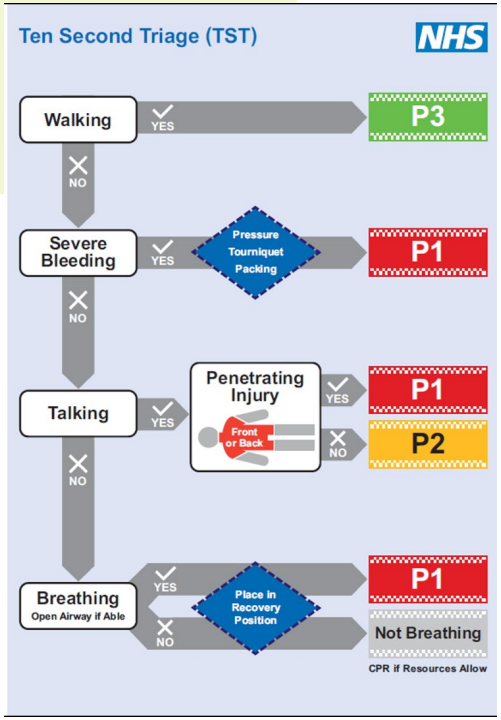
Let’s do it!

Triage Practice – Patient #1

This adult female is lying on the floor, therefore she is **NOT** **Walking.**

She has a **Severe Bleeding** injury to her right thigh.

She requires the LSI of a tourniquet.



RED – P1

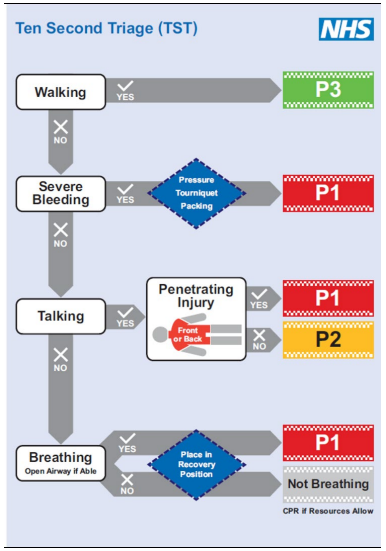
Triage Practice – Patient #2

This adult male is sat against a wall, therefore he is **NOT** **Walking**.

He has **NO** **Severe Bleeding**.

He is **Talking**.

A **Penetrating Injury** check identifies multiple stab wounds to the torso (back).



RED – P1

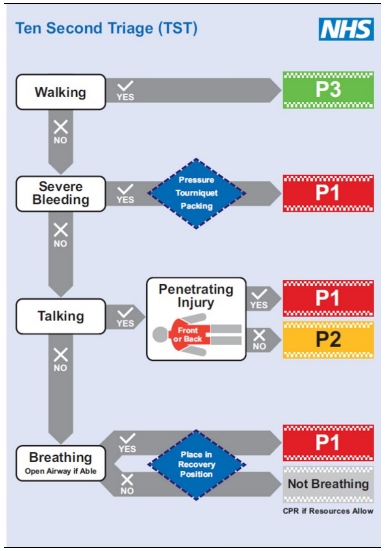
Triage Practice – Patient #3

This adult female is lying on the floor, therefore she is **NOT** **Walking**.

She has **NO** **Severe Bleeding**.

She is **Talking**.

A **Penetrating Injury** check identifies multiple stab wounds to the torso (chest).



RED – P1

Triage Practice – Patient #4

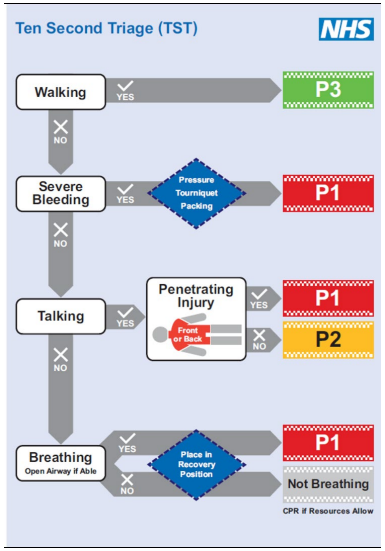
This adult male has an obvious head injury and is lying down on his back, therefore he is **NOT Walking**.

He has **NO Severe Bleeding**.

He is **NOT Talking**.

He is snoring, which confirms he is **Breathing**, BUT

He requires the LSI of airway management (ie opening his airway and placing in the recovery position).

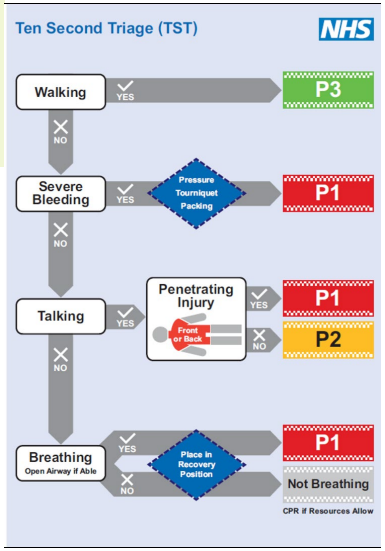


RED – P1

Triage Practice – Patient #5

This adult female runs up to the responder, therefore she is **Walking**.

She has minor injuries of superficial injuries to her palms and there is no evidence of any critical injury requiring additional consideration.



GREEN – P3

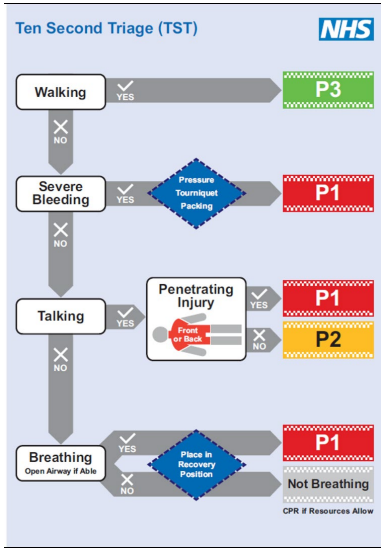
Triage Practice – Patient #6

This adult male has a gun shot wound to head and is lying face down; in other words he is **NOT** **Walking.**

He has **NO** **Severe Bleeding.**

He is **NOT** **Talking.**

He is **NOT** **Breathing.**



GRAY – NOT BREATHING

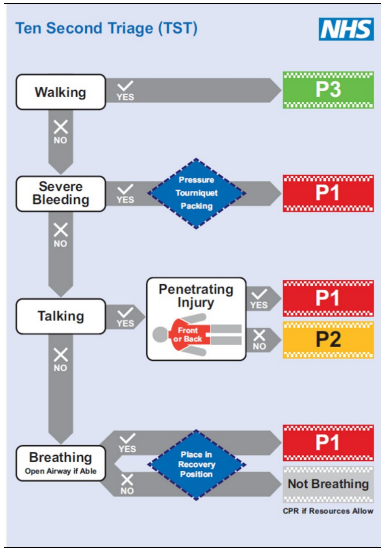
Triage Practice – Patient #7

This adult female has obvious lower limb fractures, therefore it is assumed that she is **NOT** **Walking** because she would be unable to do so on the fractures.

She has **NO** **Severe Bleeding**.

She is **Talking**.

She has **NO** **Penetrating Injury** to her torso.



YELLOW - P2

Triage Practice – Patient #8

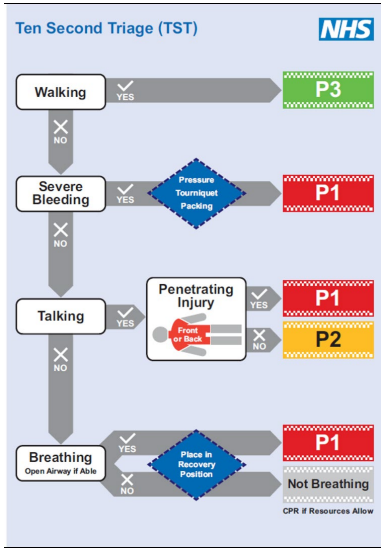
This adult male is slumped in the drivers seat of a vehicle, therefore he is **NOT Walking**.

He has **NO Severe Bleeding**.

He is making grunting noises which is does **NOT** class as **Talking**.

He is **Breathing**.

He requires the LSI of airway management (opening his airway if able to and placing in a recovery position).

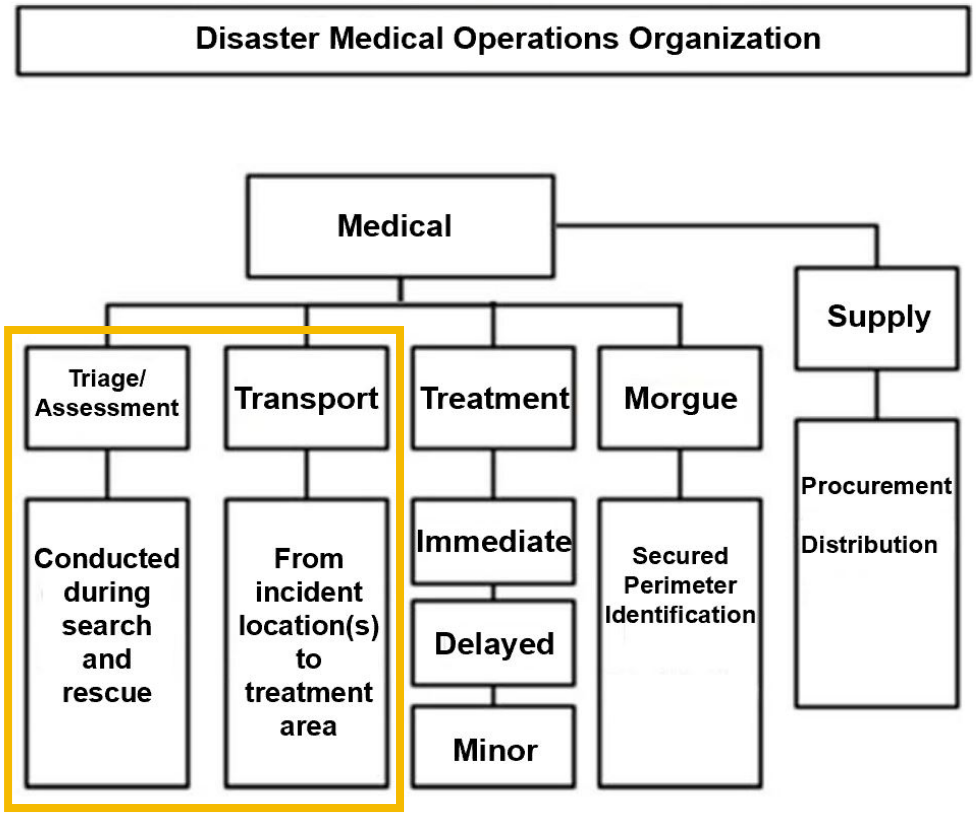


RED – P1

Triage Pitfalls

- No team plan, organization, or goal
- Indecisive leadership
- Too much focus on one injury
- Treatment performed, rather than triage

Functions of Disaster Medical Operations



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

Medical Treatment Areas

- To help meet the challenge of limited resources, NET 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

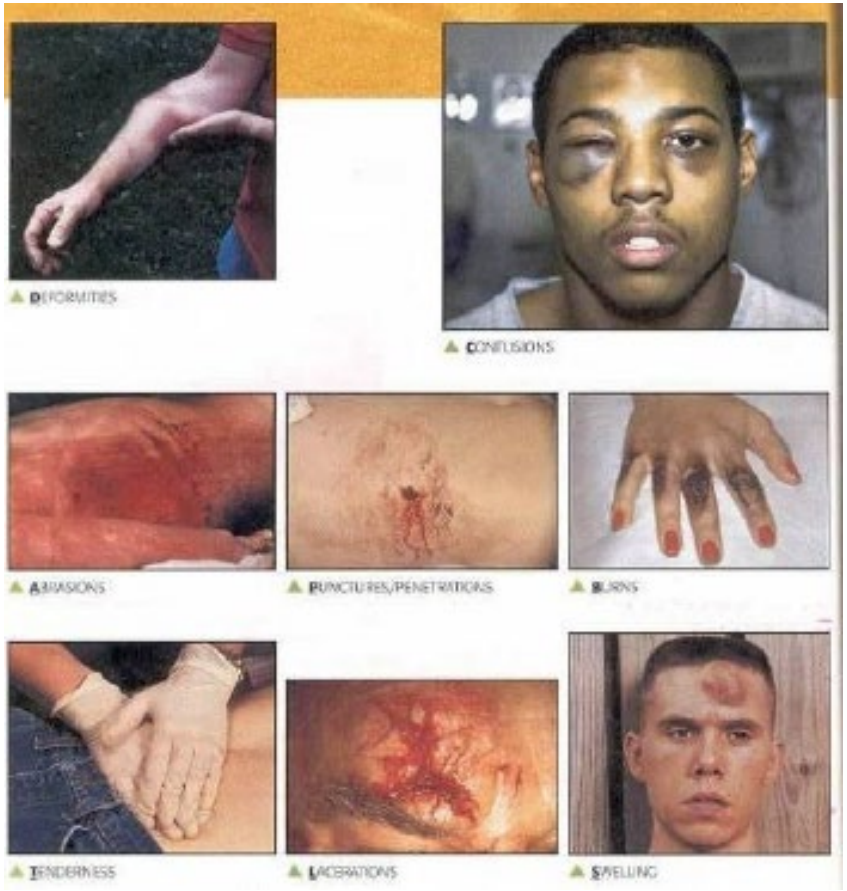
Your safety is your number one priority.

Head-to-Toe Assessment

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

DCAP-BTLS

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



Conducting Head-to-Toe Assessment

- Pay careful attention
- Look, listen, and feel
- In an unconscious survivor, suspect a spinal injury and treat accordingly
- Check your own hands for patient's bleeding

Order of Assessment

- Head
- Neck
- Shoulders
- Chest
- Arms
- Abdomen
- Pelvis
- Legs

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

Maintain 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

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/gallon of water
  - Let stand for 30 minutes
  - Sniff test

Unit Summary

- During a mass casualty incident, NET volunteers should:
  - Identify self as Trained First Aid Volunteer, and give agency affiliation
  - Assess and provide life-saving interventions
  - Provide responders with detailed information – Communication 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
- Head-to-toe assessments should be:
  - Hands-on and verbal
  - Conducted in the same way each time
- To safeguard public health, maintain proper hygiene & sanitation, and purify water

Homework Assignment

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