

## Community Emergency Response Team



### Disaster Medical Operations Part II

Released: 20 January 2023      **Contra Costa CERT Coalition**

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## Community Emergency Response Team


- 👤 Personal safety is ALWAYS the number one priority
- 👤 Show up prepared
  - Wear appropriate clothing and footwear, have WATER
  - Wear PPE – your personal protective equipment ...gloves, helmet, goggles, mask, boots, etc.
  - Have at least one communications device: cell, radio, etc.
- 👤 Work as a team
- 👤 Size-up - maintain situational awareness
- 👤 The CERT goal is to do the
  - **Greatest Good for the Greatest Number**
- 👤 *Hope for the best but plan for the worst!*


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Unit Objectives


Assure personal protection


Protect public health with appropriate sanitation measures

Establish treatment areas

Perform head-to-toe patient assessments (HTTA)

Recognize medical issues

Learn basic disaster first aid



Warning: Some graphic images


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Public Health Considerations

Maintain proper hygiene

Maintain proper sanitation

Purify water (if necessary)

Prevent spread of disease









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### Steps to Maintain Proper Hygiene

-  Frequently sanitize hands for at least 20 seconds using soap and water or alcohol-based hand sanitizer
-  Change non-latex medical gloves after each patient
  - If out of gloves, can disinfect with 1 part bleach to 10 parts water for at least 20 seconds
-  Wear N95 mask and goggles
-  Keep appropriate distance
-  Keep dressings sterile
-  Avoid contact with bodily fluids



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### Maintain Sanitation

-  What is **Medical Waste**?
  - Contaminated with body fluids
-  Disposal / Transport / Storage of biohazardous waste
  - Put medical waste in red plastic bags
  - Tie off bags
  - Mark as medical waste
  - When is it OK to leave on site?
-  Bury human waste – Mark the spot  
If it's wet and it's not yours ⚡  
**DON'T TOUCH IT !**



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### Disinfection of Drinking Water

- Boil for 1 minute – rolling boil
- Water purification tablets
- Filtration system
- Liquid bleach, unscented, *fresh*
  - 8 drops/gal of water (3 ml / 5 gal)
  - Let stand for 30 min before use
  - Double dose of bleach if it's old or if water cloudy
  - For more information:  
<https://www.cdc.gov/healthywater/emergency/making-water-safe.html>

Sodium hypochlorite  
5% - 8.25%



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### Disaster Medical Operations

Functions:

- Triage
- Transport
- Treatment
- Morgue
- Supply




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Disaster Medical Operations

 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

➤ Safety of survivors

➤ Most effective use of resources

➤ Access for transportation assets



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Establishing Treatment Areas

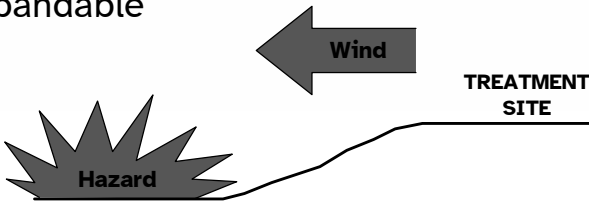
Site selected should be:

 In a safe area

 Close to but upwind, upstream and uphill from any hazard zones

 Accessible by transportation vehicles

 Expandable



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### Establishing Treatment Areas

Incident Site  
Triage

Assign treatment leader to each treatment area

Treatment Area

REDYELLOWGREEN

BLACK

TRANSPORTATION

Transport **REDS** to a higher level of medical care as soon as possible

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### Documentation in Treatment Areas

Available identifying information

Name, phone number, address, etc.

Description

Age, sex, body build, approximate height and weight

Clothing

Injuries sustained

Internal tracking number

Treatment and actions taken

Transfer location

HEAD TO TOE ASSESSMENT

Name

Description

Chief Complaint

Sex Age Meds Inj

S-Satisfactory U-Comment Below

Time of Assessment					
Head					
Neck					
Shoulders					
Chest					
Arms					
Abdomen					
Pelvis					
Legs					
Feet					
Mental Status					
CERT Initials					

Symptoms

Attach to victim

PATIENT HISTORY

Address

Phone

Contact Name

Contact Phone

Physician

City

Last Oral Intake

Allergies - Food

Allergies - Drug

Medications

Asthma/Lung

Back Pain

Cancer

Cardiac

Diabetes

Eye Glasses

Seizures

Strokes

History

Taken By

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Review: life-threatening injuries

*Provide **immediate** treatment for life-threatening injuries!*

**Three Killers**  
Airway, Bleeding, Shock

**Remember**  
30-2-Can Do

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Head-to-Toe Assessment (HTTA)

- Determine type and extent of injuries
- Determine the type of treatment needed
- Document changes in patient condition
- Document actions taken
- Resources permitting, conduct HTTA on all survivors, even those who seem OK and were initially tagged green


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Conducting Head-to-Toe Assessment

 ID yourself

 Get permission

 Respect privacy

 Look for medical identification

***Patient has the right to refuse treatment***

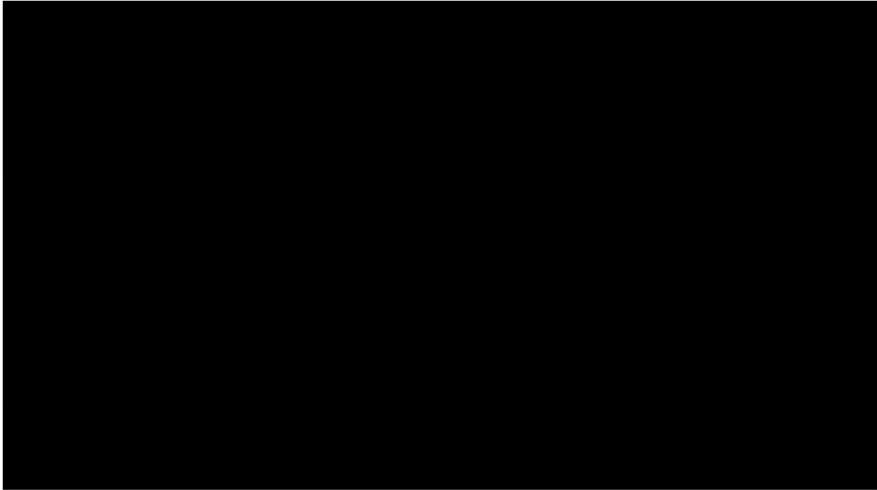
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Head-to-Toe Assessment – demo or video



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### Conducting Head-to-Toe Assessment

- 👤 Talk to the patient!
- 👤 Become aware of Mechanism Of Injury
- 👤 Children are assessed *Toe-to-Head*
- 👤 Be systematic, work with partner/scribe
- 👤 Score pain, 0=none 10=unbearable
- 👤 Hands-on assessment
  - Look, listen and feel for anything unusual – DCAP-BTLS
  - Check your own gloves for patient's blood
  - Check circulation, sensation, motion (CSM) in all extremities
- 👤 Everyone gets tagged




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### Conducting Head-to-Toe Assessment

- 👤 Look first for “The Killers”
  - Airway obstruction
  - Excessive bleeding
  - Shock
- 👤 Then look for head and neck injuries
- 👤 Then, any other injuries



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Signs of Closed Head, Neck or Spinal Injury

- 🧑 Diminished consciousness
- 🧑 Inability to move apparently uninjured body parts
- 🧑 Severe pain directly over the spine
- 🧑 High-impact or other dangerous mechanism of injury
- 🧑 Blow to head
- 🧑 Survivor found under heavy debris

***Move only if required for safety. Work with partner to minimize movement of head, neck and spine***

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Head-to-Toe Assessment

Let them know what you are doing.

**Communicate!**

1. RPM – **treat life-threatening injuries immediately!**

2. Head

3. Neck

4. Shoulders

5. Chest


6. Arms/Hands

7. Abdomen

8. Pelvis

9. Legs/Feet

10. Back



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Types of Injuries – DCAP-BTLS

👤

Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment

👤

**D**eformities

👤

**C**ontusions

👤

**A**brasions

👤

**P**unctures

—

👤

**B**urns

👤

**T**enderness

👤

**L**acerations

👤

**S**welling

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Types of Injuries – DCAP-BTLS

👤

**D**eformities - Alteration in or distortion of the natural form of a part or the body




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Types of Injuries – DCAP-BTLS

 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment




Deformities   Contusions   Abrasions   Punctures


Burns   Tenderness   Lacerations   Swelling

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Types of Injuries – DCAP-BTLS


 **Contusion** - the medical term for a bruise. It is the result of a direct blow or an impact, such as a fall





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Types of Injuries – DCAP-BTLS

 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment









Burns

Tenderness

Lacerations

Swelling


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Types of Injuries – DCAP-BTLS

 **Abrasion** - a type of open wound that's caused by the skin rubbing against a rough surface. It may be called a scrape or a graze




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Types of Injuries – DCAP-BTLS


 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment



Deformities



Contusions



Abrasions

Punctures

Burns

Tenderness

Lacerations

Swelling


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Types of Injuries – DCAP-BTLS

 **Puncture** - a hole, wound, or perforation made by piercing with a pointed instrument or object




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Types of Injuries – DCAP-BTLS

 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment

**Deformities**

**Contusions**

**Abrasions**

**Punctures**

**B**urns

**T**enderness

**L**acerations

**S**welling


Visual DMO2.28


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Types of Injuries – DCAP-BTLS

 **Burn** - Damage to the skin or other body parts caused by extreme heat, flame, contact with heated objects, or chemicals.




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Types of Injuries – DCAP-BTLS

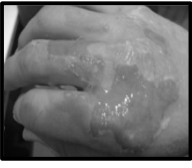
 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment


  
Deformities


  
Contusions


  
Abrasions

  
Punctures

  
Burns

  
Tenderness


  
Lacerations


  
Swelling

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Types of Injuries – DCAP-BTLS

 **Tenderness** - **pain** or **discomfort** when an affected area is touched





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Types of Injuries – DCAP-BTLS

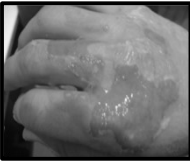
 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment


**Deformities**

**Contusions**

**Abrasions**

**Punctures**

**Burns**

**Tenderness**

**Lacerations**

**Swelling**


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Types of Injuries – DCAP-BTLS

 **Laceration** - a wound that is produced by the tearing or cutting of soft body tissue




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Types of Injuries – DCAP-BTLS

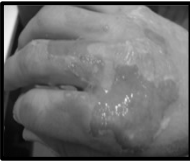
 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment


**Deformities**


**Contusions**


**Abrasions**

**Punctures**

**Burns**

**Tenderness**

**Lacerations**

**Swelling**


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Types of Injuries – DCAP-BTLS

 **Swelling** - the enlargement of organs, skin, or other body parts.  
It is caused by a buildup of fluid in the tissues




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Types of Injuries – DCAP-BTLS

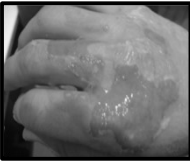
 Mnemonic **DCAP-BTLS** is used to remember things to look for during Head-to-Toe Assessment


**Deformities**


**Contusions**


**Abrasions**

**Punctures**

**Burns**

**Tenderness**

**Lacerations**

**Swelling**


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Practice Head-to-Toe Assessment


**D**eformities


**C**ontusions


**A**brasions

**P**unctures

**B**urns

**T**enderness

**L**acerations

**S**welling

**Practice HTTA in  
groups of 3  
(patient, examiner,  
scribe)**

**Paying attention to DCAP-BTLS**

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Burns

 Sources of burns:

➤ Heat

➤ Chemicals

➤ Electricity

➤ Radiation

STAY SAFE

Situational Size-Up, Wear PPE


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Burns: Deeper = more severe

 **Epidermis** – First Degree – red, not blistered, sunburn

 **Dermis** – Second Degree – red, swollen, blistered

 **Subcutaneous layer** – Third Degree – white, leathery, charred, may not be painful

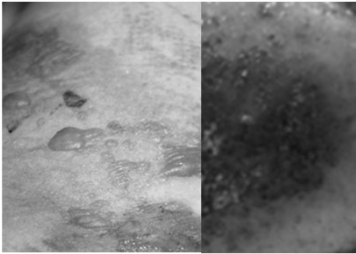
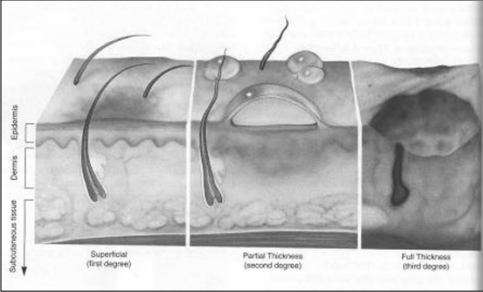


Image credits: Cjr80 Wikimedia Commons, Lakeland Regional Medical Center, St Joseph, Michigan

Visual DMO2.39


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Treating Burns


 Remove patient from burning source

 Cool the burned area

 Cool running water for up to 30 minutes, but do not delay definitive care

 No more than size of approximately one-half arm at a time (hypothermia risk)

 Cover loosely with dry sterile dressing to reduce infection risk




Visual DMO2.40


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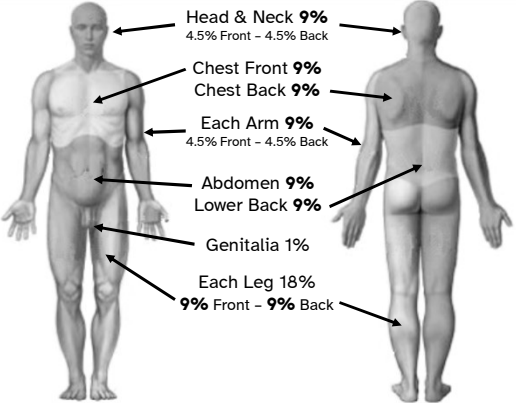
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Treating Burns – Rule of 9's

 The body can be divided into cooling regions

 Do not cool more than 5% at a time to prevent hypothermia and shock



Body Region	Percentage
Head & Neck	9% (4.5% Front - 4.5% Back)
Chest Front	9%
Chest Back	9%
Each Arm	9% (4.5% Front - 4.5% Back)
Abdomen	9%
Lower Back	9%
Genitalia	1%
Each Leg	18% (9% Front - 9% Back)

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Treating Burns

 No ice, antiseptics, ointments, butter, etc.

 Do not pick out foreign material or break blisters

 Extra caution with

- Frail, elderly, young children
- Any third degree burn
- Blistering or worse involving area bigger than an arm
- Head, neck, hands, feet, genitalia, joints, circumferential burns


Visual DMO2.42


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Treating Chemical Burns

 **Wear PPE, Situation Size-Up**


 Remove cause of burn & all possibly-affected clothing/jewelry


 If irritant is dry, gently brush away as much as possible


- Always brush away from eyes, patient, and you

 Flush/shower with lots of cool running water

- Unless package instructions say “No Water”

 Apply cool, wet compress to relieve pain

 Cover wound loosely with dry, sterile/clean dressing



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Inhalation Burns


 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



**Figure 27-26** A singed mustache and burns to the tip of the tongue signal danger of airway burns or burns to the eyes.

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Wound Care


**Objectives of wound care:**


 Control bleeding


 Prevent secondary infection

**Treatment of wounds:**

 Irrigate with clean water – do not scrub

 No hydrogen peroxide

 Apply dressing

 Apply bandage to hold dressing in place


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Rules of Dressing

 Dressings are in direct contact with the wound and should be sterile, if at all possible

- Reduce the risk of infection
- Stop bleeding and start clotting
- Absorb excess blood and other fluids

 Bandages hold dressings in place

- Band-Aid® and like products combine dressing and bandage. The adhesive plastic is perforated to allow airflow.
- Do not use solid plastic to hold a dressing in place, the wound needs oxygen from air to heal.


Visual DMO2.46

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Rules of Dressing

 Before and after applying a bandage, always check **CSM**:

- **Circulation**
  - Assess COLOR, TEMPERATURE, CAPILLARY REFILL
- **Sensation**
  - Ask patient about presence or absence of SENSATION, (e.g. numbness, tingling, lack of feeling)
- **Motion**
  - Ask patient to MOVE affected fingers and toes

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### Dressing a Wound



Irrigate the wound with sterile (or at least clean) water to remove as much contamination as possible.



Use tweezers, if possible, to remove small glass shards, splinters, or other solid material from the wound.



Dab the wound with cotton or cloth, *do not scrub*.


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### Dressing a Wound



Cover the wound with a dressing.



Secure the dressing with a bandage.



If using a roller bandage, roll so that the side of the bandage on the outside of the “drum” is closest to the patient’s skin.

Image credit: royallifesavingwa.com.au/


Visual DMO2.49

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### Bandaging Over a Dressing



Make a "tail" on the roller gauze so the bandage can be secured and will not come undone.



Wrap around the "tail" on the first pass and fold over the "tail" after the first pass so that the second pass covers and traps the "tail".

Start away from the heart (distal) and work towards the heart (proximal) to prevent blocking circulation.


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### Bandaging Over a Dressing



Periodically put "half twists" in the roller gauze. Direct pressure increases beneath the twists, so twists should lie on top of the bleeding point if one can be identified.



Tie off the roller gauze by opening up the remainder of the roller gauze and making a loop under the forearm.



Tie the two ends of the gauze together in a bow tie. Completed bandage maintains pressure on the wound and will not slide on the forearm.


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Impaled Objects



 When a foreign object is impaled in patient's body

➤ Do not attempt to move or remove!

➤ Immobilize affected body part

➤ Try to control bleeding

➤ Stabilize impaled object during bandaging




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Demo - Emergency “Israeli” Bandage

 A trauma wound dressing that includes both the dressing and a compression bandage in one piece

 In standard use by military and first responders



Visual DMO2.53

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Treating Amputations

- Control bleeding and elevate part
- Save tissue part, wrapped in clean cloth
- Place in baggie with patient's name, date and time
- Keep tissue dry and cool, not frozen  
( bagged in an outer bag of ice water OK)
- Keep tissue with the patient
  - Duct tape to body, out of patient's sight



Visual DMO2.54

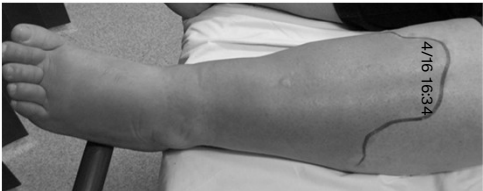
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Signs of Infection

- Pain
- Swelling
- Warm/Hot to touch
- Red striations from wound site
  - Outline edge of red with marker, including time/date
- Redness
- Discharge/pus
- Fever



Visual DMO2.55

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### Injuries to Bones, Muscles, and Joints

#### Symptoms

- 🧑‍🚒 Tenderness at injury site
- 🧑‍🚒 Swelling and/or bruising
- 🧑‍🚒 Restricted use or loss of use



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### Injuries to Bones, Muscles, and Joints

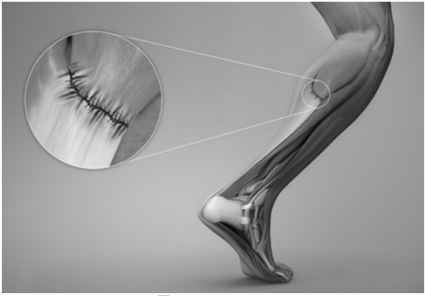
- 🧑‍🚒 Check **C**irculation, **S**ensation, **M**otion, (**CSM**) below injury before and after treatment
- 🧑‍🚒 Immobilize areas immediately above and below injury site
  - Joint above and joint below a fracture
  - Bones above and bones below a joint injury
- 🧑‍🚒 If uncertain about injury severity, treat as fracture

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## Strains

- 👤 A strain is a stretching or tearing of muscle or tendon
- 👤 A tendon is a fibrous cord of tissue that connects muscles to bones
- 👤 Strains often occur in the lower back, as a groin pull, or in the hamstring muscle in the back of the thigh




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## Sprains

- 👤 A sprain is a stretching or tearing of ligaments — the tough bands of fibrous tissue that connect two bones together in joints
- 👤 The most common location for a sprain is in the ankle



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Strains and Sprains

- 🧑‍🚒 Tenderness, swelling, bruising, loss of function
- 🧑‍🚒 Check **C**irculation, **S**ensation, **M**otion (**CSM**) below injury before and after treatment
- 🧑‍🚒 Immobilize areas immediately above and below injury site
- 🧑‍🚒 Use the **RICE** mnemonic:
  - **R**est **I**ce **C**ompression **E**levation
- 🧑‍🚒 If uncertain about injury severity, treat as fracture

Visual DMO2.60


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Dislocations

- 🧑‍🚒 A dislocation is an injury to ligaments around a joint that is so severe that it permits separation of bone from its normal position in the joint
- 🧑‍🚒 Treatment
  - Immobilize, **DO NOT** relocate
  - Check **CSM** before and after splinting



Visual DMO2.61


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Fractures


A fracture is a broken bone. It can range from a thin crack to a complete break. It can stay in place, displace or break through the skin. The three types are:



**Closed  
Nondisplaced**



**Closed  
Displaced**



**Open**

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Treating an Open Fracture

**DO:**

- Place a moist 4" x 4" dressing over bone end to prevent drying
- Cover wound with sterile dressing
- Splint fracture without disturbing wound

**DO NOT:**

- Draw exposed bones back into tissue
- Irrigate wound



Visual DMO2.63


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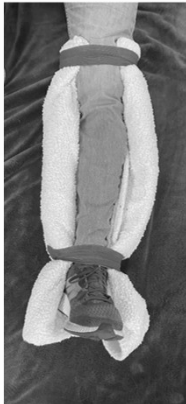
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### Splinting – Types of Splints



**Anatomical**  
body part to body part



**Soft**  
pillows, towels,  
socks, stuffed toys



**Rigid**  
cardboard, sticks

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### Splinting Guidelines

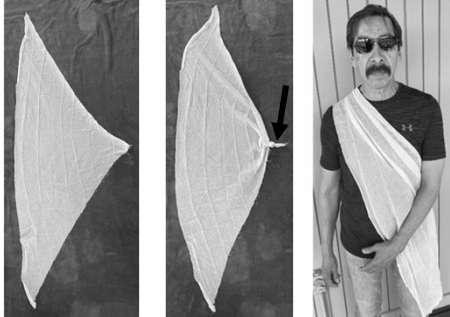
- 👤 Splint before moving the patient
- 👤 Check **CSM** below injury before splinting
- 👤 Do not use injured part as the template
- 👤 Splint in the position you find it/position of comfort
  - *Do not try to realign bones or joints*
- 👤 Remove jewelry (if possible). Bag and tag.
- 👤 Support & immobilize areas above & below injury
- 👤 Fill voids to stabilize & provide comfort
- 👤 Reassess **CSM** after splinting

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### How to Sling

1. Knot the 90° “point” to form a pocket to prevent the arm from slipping out the back/elbow side of the sling
2. Place triangular bandage lengthwise against the person's body
3. Side closest to body goes over uninjured side shoulder



Visual DMO2.66

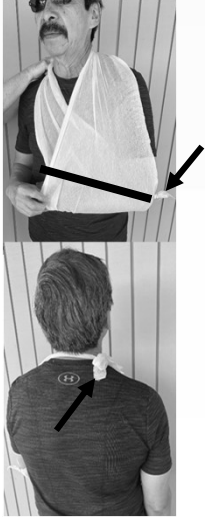
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### How to Sling

4. Point of the bandage is towards elbow of injured arm
5. Splint in position you find arm, preferably with hand slightly elevated
6. Fill in “voids” for support
7. Tie the hanging end of the bandage to the top end by looping it behind the person's neck
  - tie on the *side* of neck on uninjured side, not over spine
8. The injured arm should be comfortably supported in the sling
9. A ‘binder’ can be tied around the body to keep the arm from bouncing



Visual DMO2.67

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### Bleeding Control – Tourniquet

- 👤 Between limb wound and heart
- 👤 2-3 inches above wound
- 👤 Not over a joint
- 👤 Twist until bleeding stops
  - *If a pulse below the tourniquet can be felt, twist further, but only until the pulse is gone*
- 👤 Leave it in plain sight
  - *Don't bandage over it*
- 👤 Label patient's forehead with
  - *Time and Date tourniquet applied*
- 👤 Only a physician should remove



Credit: American Red Cross

Visual DMO1.69      Contra Costa CERT Coalition

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Bleeding Control – Tourniquet

 Commercial tourniquets preferred



 Improvised tourniquet if no commercial one is available

- Wide (~ 2-3 inches)
- Not stretchy
- Not stiff (no leather belts)
- Strong windlass (stick/lever)




Visual DMO1.70

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Stop the Bleed Training



The **Stop the Bleed** campaign is a national initiative – created by the American College of Surgeons with input from first responders and law enforcement – that provides bystanders with the tools and knowledge to stop life-threatening bleeding during the precious moments before first responders arrive.


Ask your instructor about the next class in the area.


Visual DMO1.71


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Practice

 Bandaging

 Splinting

 Slings

 Tourniquets


Visual DMO2.72

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Bites and Stings

 If a bite or sting is suspected, and the situation is non-emergency:

➤ Remove stinger if still present by scraping edge of a credit card or other stiff, straight-edged object across stinger

➤ Wash site thoroughly with soap and water

➤ Place ice on site:  
10 minutes on,  
10 minutes off



Visual DMO2.73

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Anaphylaxis

- 🧑‍🚒 Anaphylaxis is a serious, life-threatening allergic reaction. The most common anaphylactic reactions are to foods, insect stings, medications and latex
- 🧑‍🚒 Check airway and breathing
- 🧑‍🚒 Remove constrictive clothing and jewelry
- 🧑‍🚒 Find and help administer victim's auto-injector following package instructions
- 🧑‍🚒 Write time administered on victim's skin
- 🧑‍🚒 Watch for signs of shock and treat appropriately



Visual DMO2.74

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HypOthermia

**Primary signs and symptoms:**

- 🧑‍🚒 Body temperature of 95° Fahrenheit (35° Celsius) or less
- 🧑‍🚒 Redness or blueness of the skin
- 🧑‍🚒 Numbness accompanied by shivering

**Later stages of HypOthermia:**

- 🧑‍🚒 Slurred speech
- 🧑‍🚒 Unpredictable behavior
- 🧑‍🚒 Listlessness and confusion


Visual DMO2.75


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Treating HypOthermia

 Remove wet clothing


 Wrap victim in a blanket or sleeping bag and cover head and neck or

 Place victim in warm bath

 Protect victim from weather

 Provide warm fluids to conscious victims

➤ No alcohol, caffeine or soda

 Place unconscious victim in recovery position

***Even mild degrees of hypOthermia can have serious consequences***

Visual DMO2.76

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Frostbite

 Frostbite is an injury caused by freezing of the skin and underlying tissues

 Symptoms include:

➤ Skin discoloration

➤ Burning or tingling sensation

➤ Partial or complete numbness





Visual DMO2.77

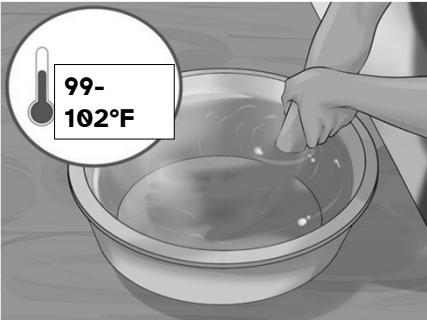
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Treating Frostbite

- Immerse injured area in warm (NOT hot) water until tissue is soft, red or purple
- Warm slowly!
- Do NOT allow part to re-freeze
- Do NOT massage
- Wrap affected body parts in bulky dry, sterile dressing



wikiHow

Visual DMO2.78


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Stages of Hyperthermia

- Hyperthermia comes in many stages, from heat stress through heat stroke
- Heat cramps** are muscle spasms brought on by over-exertion in extreme heat
- Heat exhaustion** results from exercising or working in extreme heat, resulting in loss of bodily fluids
- Heat stroke** occurs when the body's temperature regulation system shuts down and the body temperature rises so that brain damage or death may result
- Special attention is needed when wearing PPE in heated environments



Visual DMO2.79

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Symptoms of Hyperthermia

<b>Heat Exhaustion</b>	<b>Heat Stroke</b>
<b>Heavy sweating</b>	<b>Red, hot, dry skin (no sweating)</b>
<b>Not Confused</b>	<b>Confusion</b>
Tiredness	<b>Unconsciousness</b>
Cold, pale, clammy	Body temperature over 103°F
Rapid, strong pulse	Fast, weak pulse
Muscle cramps	Throbbing headache
Dizziness or headache	Dizziness
Nausea or vomiting	Nausea

*Heat Stroke is the most severe form of hyperthermia and is a **life-threatening emergency!***

Visual DMO2.80

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Treating Severe Hyperthermia

- Remove from heat to cool environment
- Cool body – **immediate water immersion**/shower/ garden hose/evaporative cooling if heat stroke suspected – *before* transport
- Sports drink (not salt tablets) or water, if sports drink-like solution not available – slowly, avoid vomiting
- No food or drink if patient is experiencing vomiting, abdominal cramping, or is losing consciousness
- If heat exhaustion does not improve in 15-20 min or if there are signs of heat stroke, triage status is **red**, patient requires **immediate transport to advanced care**
- Must be symptom-free for 24 hours before returning to work and may need to stay out of heat for a while


Visual DMO2.81

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Questions ?




Visual DMO2.82

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Takeaways

 Personal safety is paramount

- PPE
- Hand sanitization
- “If it’s wet and not yours, don’t touch it”
- Medical treatment doesn’t start until you and your patient are safe

 To do:

- Learn more about first aid
- Download authoritative information (e.g. from American Red Cross) to your cell phone

Visual DMO2.83

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