Community Emergency Response Team

Contra Costa CERT Coalition

Disaster Medical Operations
Part II

Released: 18 July 2026 Contra Costa CERT Coalition

0

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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1

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



4

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 !

5

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



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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



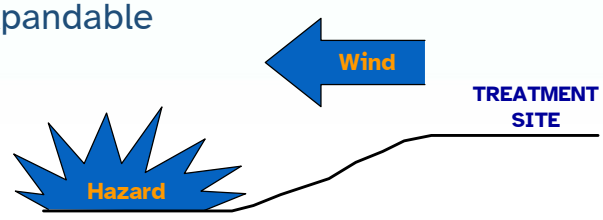
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8

Establishing Treatment Areas

Site selected should be:

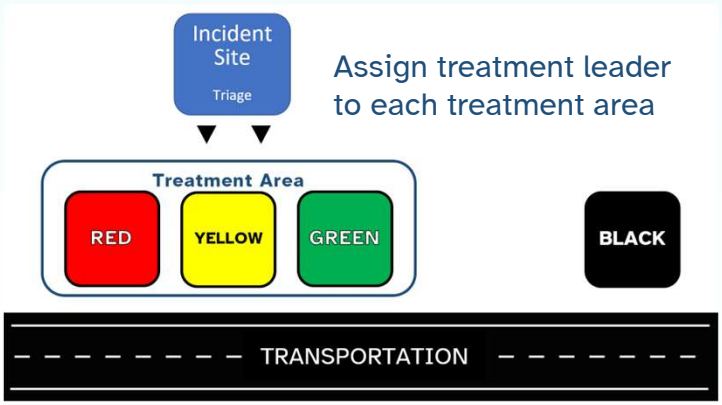
- In a safe area
- Close to but upwind, upstream and uphill from any hazard zones
- Accessible by transportation vehicles
- Expandable



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Establishing Treatment Areas

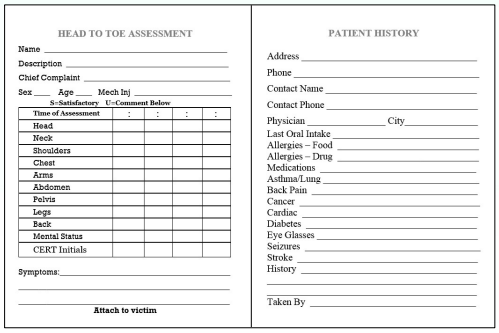


Transport **REDS** to a higher level of medical care as soon as possible

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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 ___ Mech Inj _____
S-Satisfactory U-Comment Below

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

Symptoms: _____

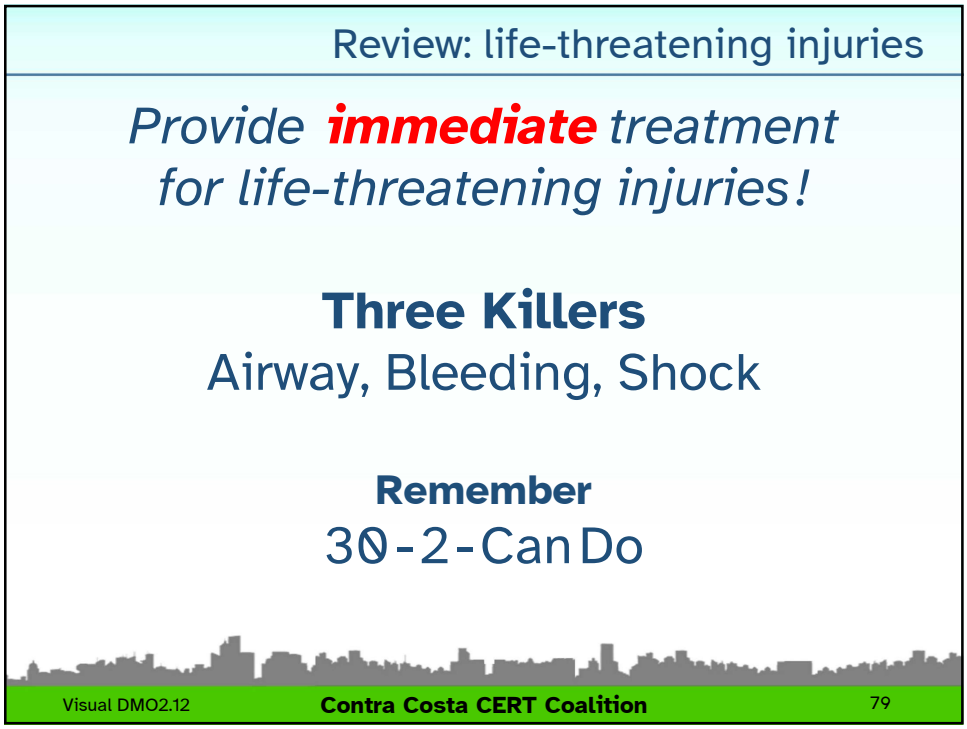
Attach to victim

PATIENT HISTORY

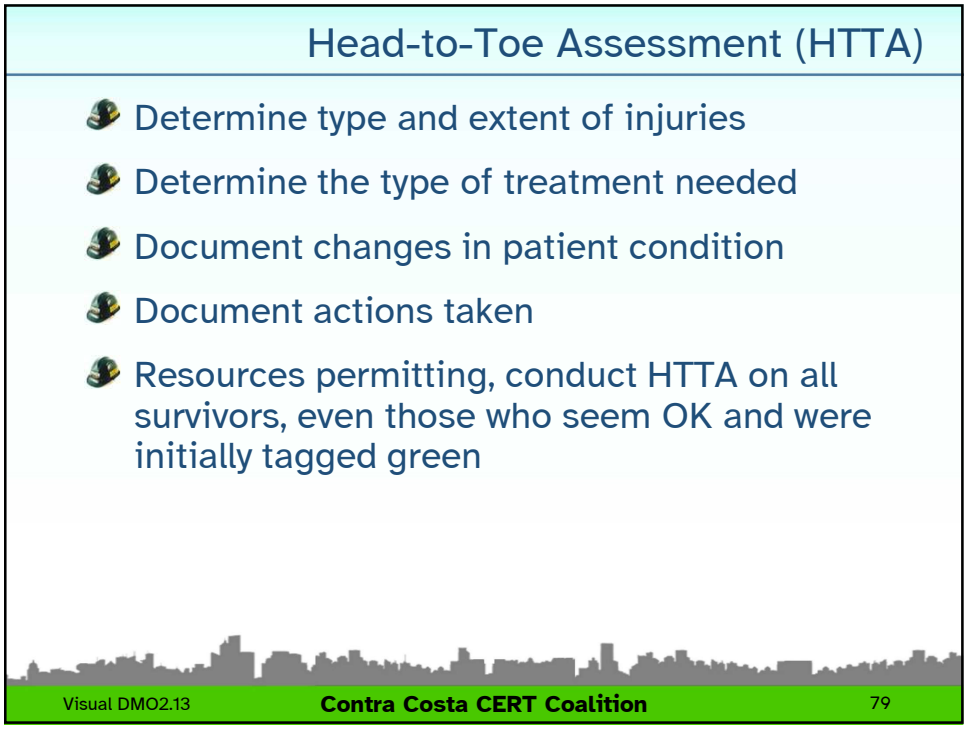
Address _____
Phone _____
Contact Name _____
Contact Phone _____
Physician _____ City _____
Last Oral Intake _____
Allergies – Food _____
Allergies – Drug _____
Medications _____
Asthma/Lung _____
Back Pain _____
Cancer _____
Cardiac _____
Diabetes _____
Eye Glasses _____
Seizures _____
Stroke _____
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



Dsprenkels@nl.wikipedia

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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 **C**ontusions **A**brasions **P**unctures

Burns **T**enderness **L**acerations **S**welling

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22

Types of Injuries – DCAP-BTLS

- **C**ontusion - 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




Deformities **C**ontusions **A**brasions **P**unctures

Burns **T**enderness **L**acerations **S**welling

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Types of Injuries – DCAP-BTLS

- **A**brasion - 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 **C**ontusions **A**brasions **P**unctures

Burns **T**enderness **L**acerations **S**welling

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Types of Injuries – DCAP-BTLS

- **P**uncture - 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

Burns **T**enderness **L**acerations **S**welling

28

Types of Injuries – DCAP-BTLS

- **B**urn - 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

- **T**enderness - **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

- **L**aceration - 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

- **S**welling - 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

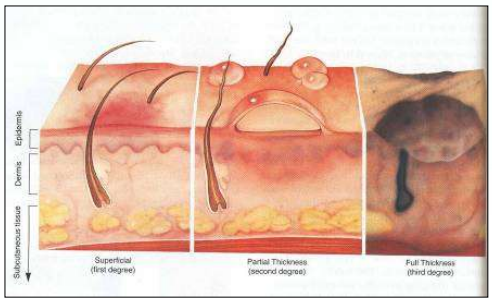




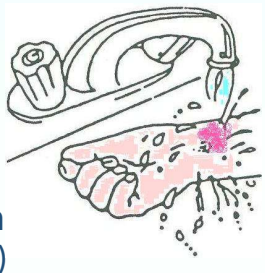
Image credits: Cjr80 Wikimedia Commons, Lakeland Regional Medical Center, St Joseph, Michigan

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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

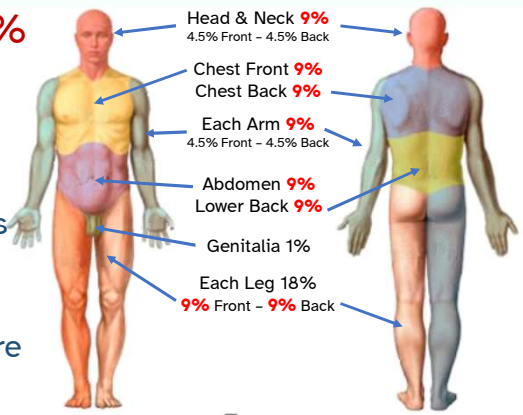


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Treating Burns – Rule of 9's

- The adult body can be divided into cooling regions
- Do not cool more than 5% at a time to prevent hypothermia and shock
- Pediatric patients have different percentages – their heads are larger and legs are smaller



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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

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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

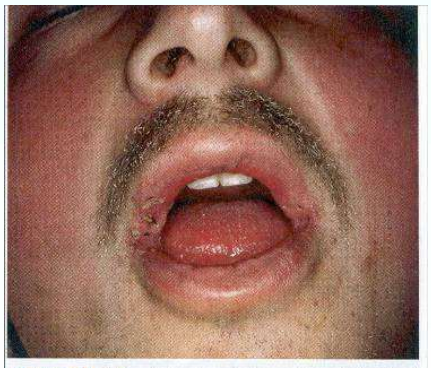


Figure 27-26 A singed mustache and burns to the tip of the tongue signal danger of airway burns or burns to the eyes.

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Break

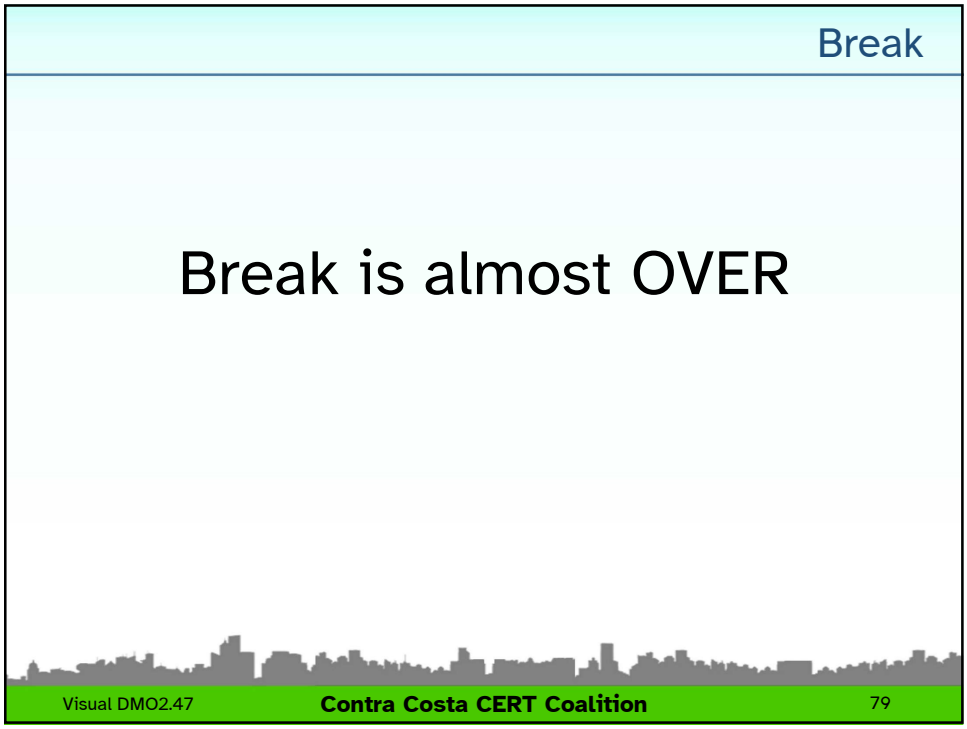
Let's take a 5 minute break



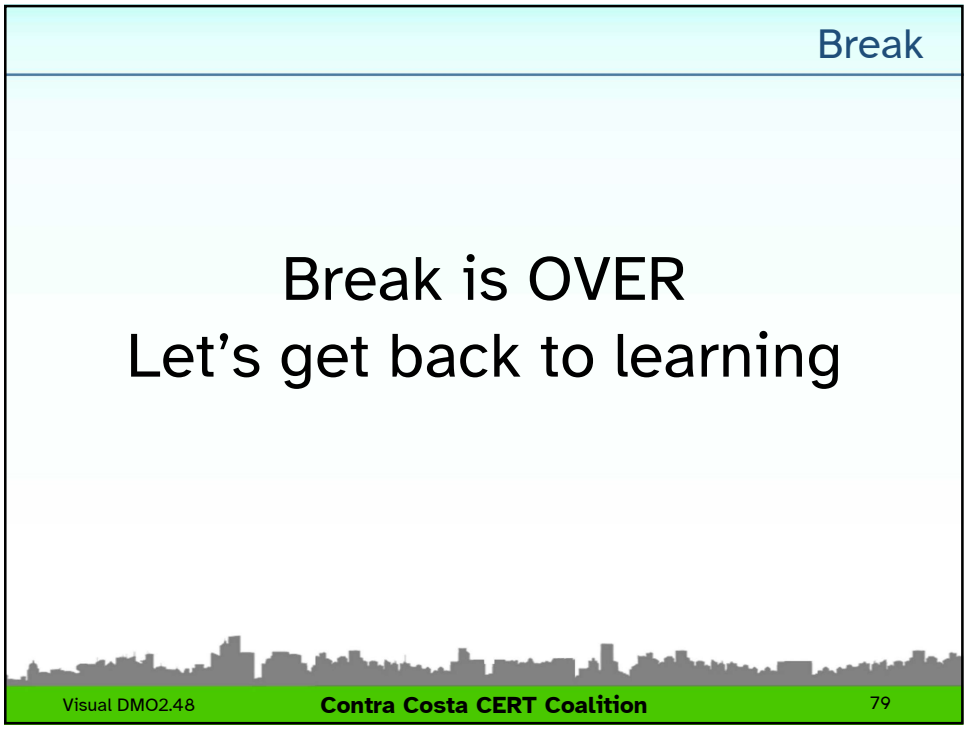
45


Break
5
4
3
2
1
Break is almost OVER
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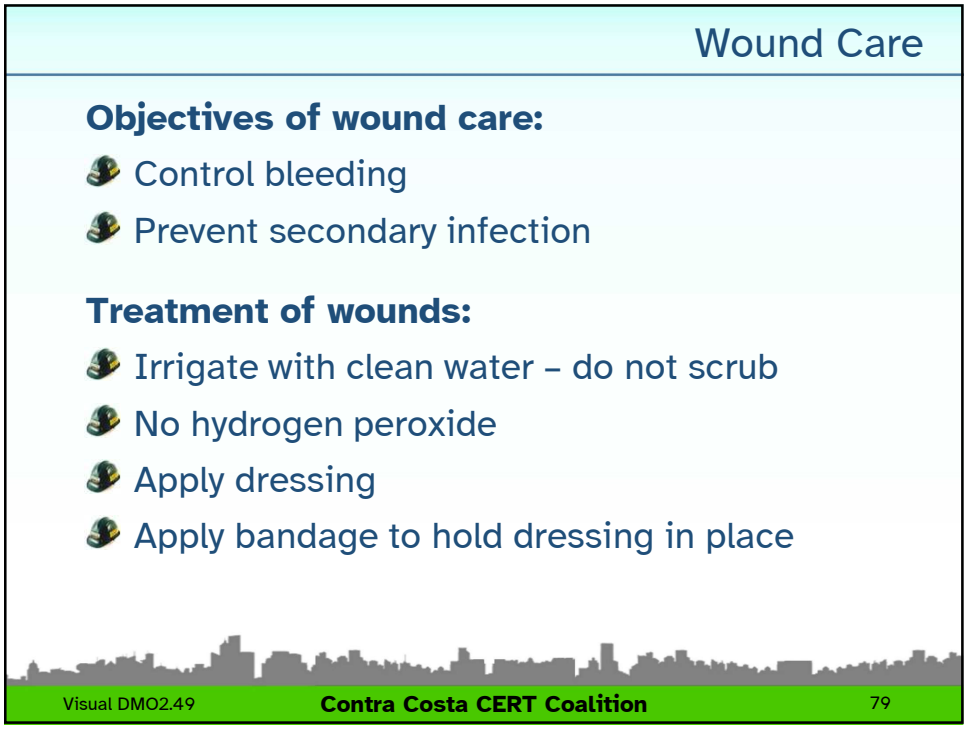
46


Break
Break is almost OVER
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47


Break
Break is OVER
Let's get back to learning
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48


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.

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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.



Image credit: royallifesavingwa.com.au/

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.

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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.



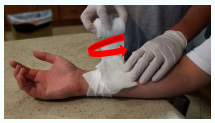
Wrap around the “tail” on the first pass and fold over the “tail” after the first pass so that the second pass covers and traps the “tail”.

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.

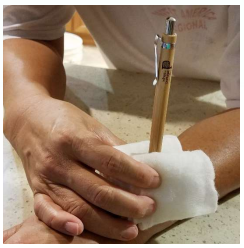
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55

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



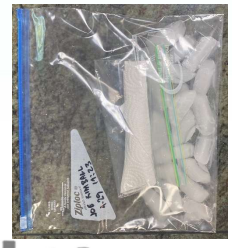
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Treating Amputations

- 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



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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



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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

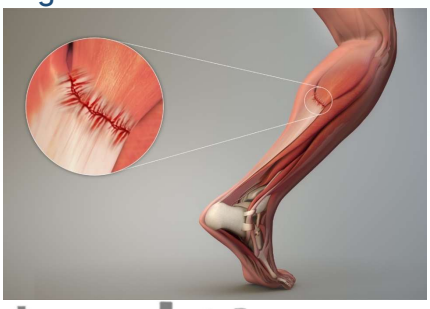
- Check **C**irculation, **S**ensation, **M**otion, (**CSM**) below injury before and after treatment
- Immobilize areas immediately above and below injury site
  - Joint above and joint below a fracture
  - Bones above and bones below a joint injury
- If uncertain about injury severity, treat as fracture

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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

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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

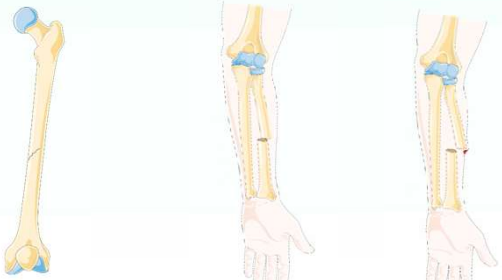


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Fractures

- 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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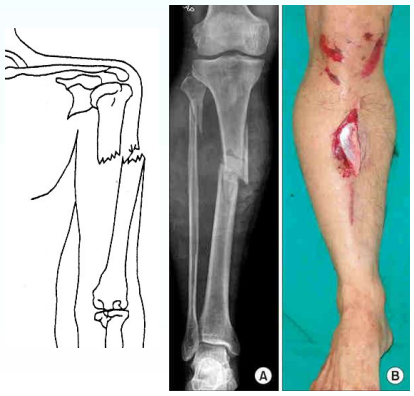
Treating an Open Fracture

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:

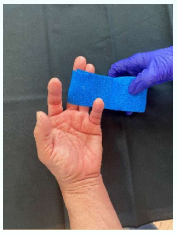
- Draw exposed bones back into tissue
- Irrigate wound



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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





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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




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Bleeding Control – Tourniquet



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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

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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)





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Stop the Bleed® Training

STOP THE BLEED™

The **Stop the Bleed®** campaign is a national initiative – created by the Department of Defense and 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.

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Practice

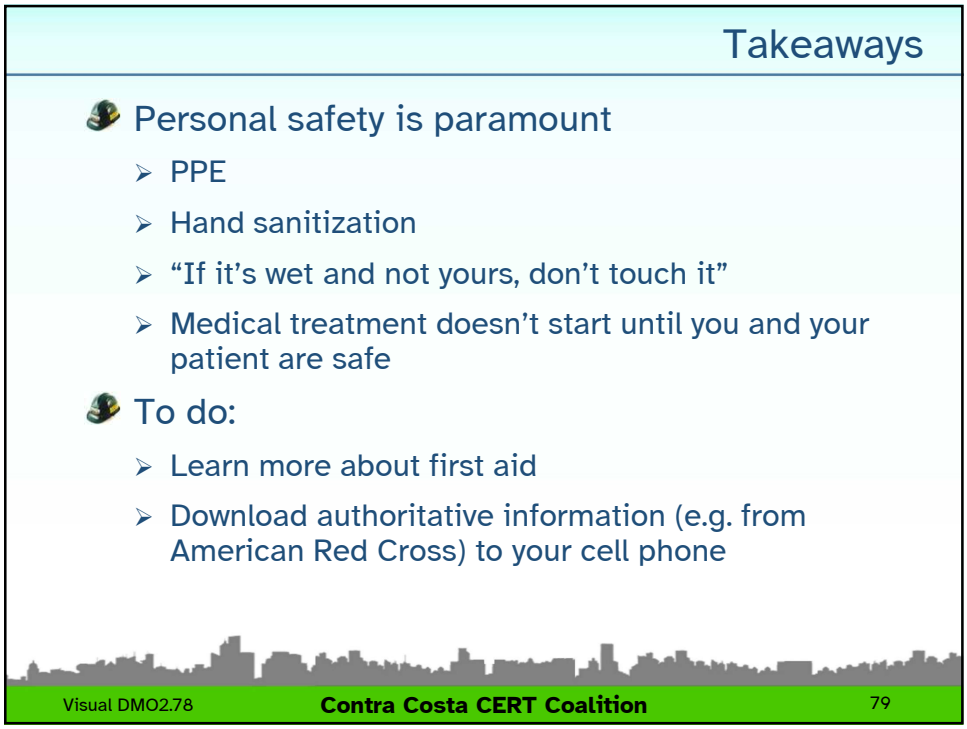
- Bandaging
- Splinting
- Slings
- Tourniquets

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Questions ?



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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
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