Unit V – Wellness, Fitness and First Aid

Chapter 10 - First Aid for Emergency and Nonemergency Situations

Section 2 – CPR and Emergency First Aid

What You Will Learn to Do

Determine first aid procedures and apply them as needed

Objectives

1. Demonstrate life-saving skills in emergencies
2. Determine first aid procedures for a bleeding victim
3. Give first aid treatment for shock, fractures, strains, and sprains

Key Terms

Cardiopulmonary Resuscitation (CPR) -	An emergency method to keep blood and oxygen flowing through a person whose heart and breathing have stopped
Cardiac Arrest -	The sudden stoppage of the heart
Stroke -	A reduction of blood flow to a part of the brain

Key Terms

Automated External Defibrillator (AED) -	A device used to treat a patient with cardiac arrest whose heart is beating irregularly
Arteries -	Blood vessels that carry blood away from the heart to all parts of the body
Veins -	Blood vessels that carry blood from all parts of the body to the heart

Key Terms

Hemorrhage -	Heavy, uncontrollable bleeding
Dressing -	Ointment and bandages applied to a wound
Pressure Bandage -	A snug bandage used to control bleeding
Pressure Point -	A point on the body where a major artery lies near the skin surface and passes over a bone

Key Terms

Trauma -	A behavioral state resulting from mental or emotional stress of physical injury that has a lasting effect on the mind; a physical wound or injury
Clammy -	Damp, soft, sticky and unusually cool
Closed (simple) Fracture -	A fracture in which the broken bone does not push through the skin's surface

Key Terms

Open (compound) Fracture -	A fracture in which the broken end of a bone pierces the skin
Splint -	To support and immobilize a body part with a stiff material
Dislocation -	The separation of a bone from its joint
Sprain -	An injury caused by twisting a ligament or tendon around a joint

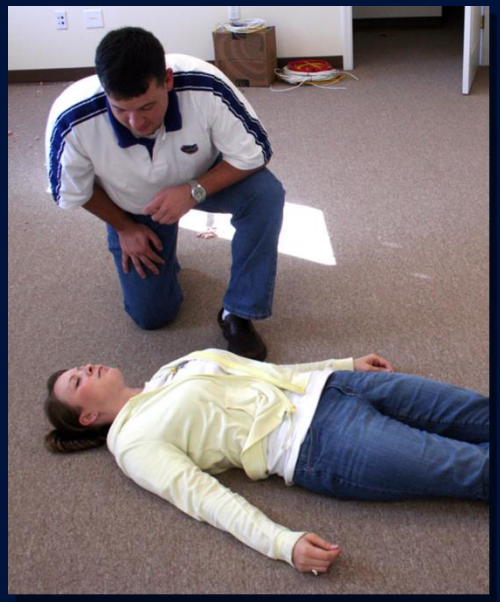
Key Terms

Ligament - A fibrous band of tissue that holds bones together at a joint

Strain - An injury caused when a muscle or tendon is overstretched

Cardiopulmonary Resuscitation (CPR)

As in mouth-to-mouth resuscitation (rescue breathing), when you perform cardiopulmonary resuscitation (CPR) you are a life-support system for the victim.



CPR is a combination of rescue breathing and a procedure known as closed chest heart massage.

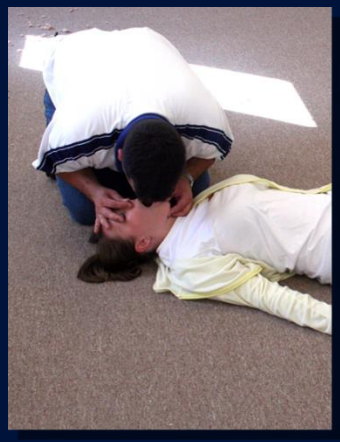
It can be performed by one or two rescuers, but we will focus on the single rescuer technique.

Cardiopulmonary Resuscitation (CPR)

Before beginning CPR, you should first:

Clear the victim's airway

Give two full breaths as in rescue breathing



Check for a pulse

You should only proceed if there is NO pulse.

Performing CPR on an Adult

1. With the middle and index fingers of the hand nearest the victim's legs, locate the lower edge of the ribcage.

2. Slide your fingers up the edge of the ribcage to the notch at the lower end of the breastbone. Place your middle finger in the notch and index finger next to it on the lower end of the breast bone.

3. Place the heel of the hand nearest the victim's head on the breastbone next to the index finger of the hand used to find the notch.

Performing CPR on an Adult

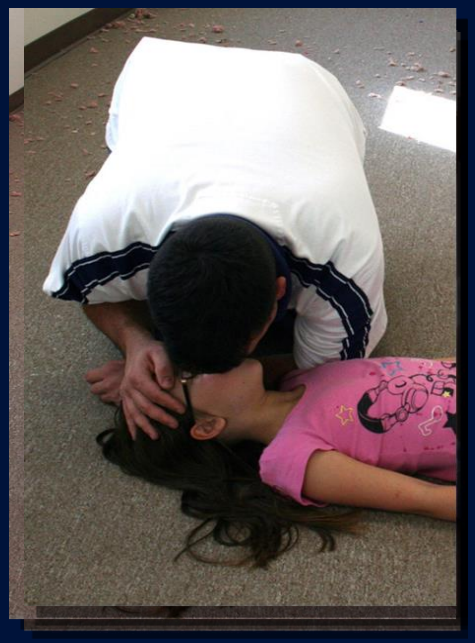
4. Place the heel of the hand used to find the notch directly on top of the heel of the other hand. Only let the heel of your hand touch the victim's chest – lift fingers up. Hands should be positioned slightly above lowest part of breastbone (xiphoid process). Avoid pressing on the xiphoid process because it breaks easily.
5. Position your shoulders over your hands, with elbows locked and arms straight.
6. Press down on the breastbone 1 ½ - 2 inches at a very quick, continuous rate. This squeezes the victim's heart against the spine and forces blood through the body.

Performing CPR on an Adult

7. While compressing, count aloud “one and two and three and four….” up to 15, which should take about ten seconds. Push down when you say a number and release when you say “and.” Do not move your hands away from chest.
8. After the 15th compression, give the victim two full breaths. Be sure to pinch the nose closed and tilt the victim’s head back to straighten the airway. Then return to the chest compression.
9. When you complete four cycles of 15 chest compressions and two breaths, check for a pulse again. If there is none, continue CPR.

Performing CPR on a Child

1. Find the notched center of the child's ribcage with the hand closest to the child's legs.
2. Measure two finger widths above notch using the other hand.
3. Place the heel of the hand closest to the legs above the two fingers. Place the other hand gently on the child's forehead, and leave it there for the rest of the procedure.
4. Using the heel of your hand and keeping your fingers off the child's chest, give five compressions 1 to 1 ½ inches deep, followed by one breath of rescue breathing. Repeat sequence 12 times a minute until breathing and heartbeat resume.



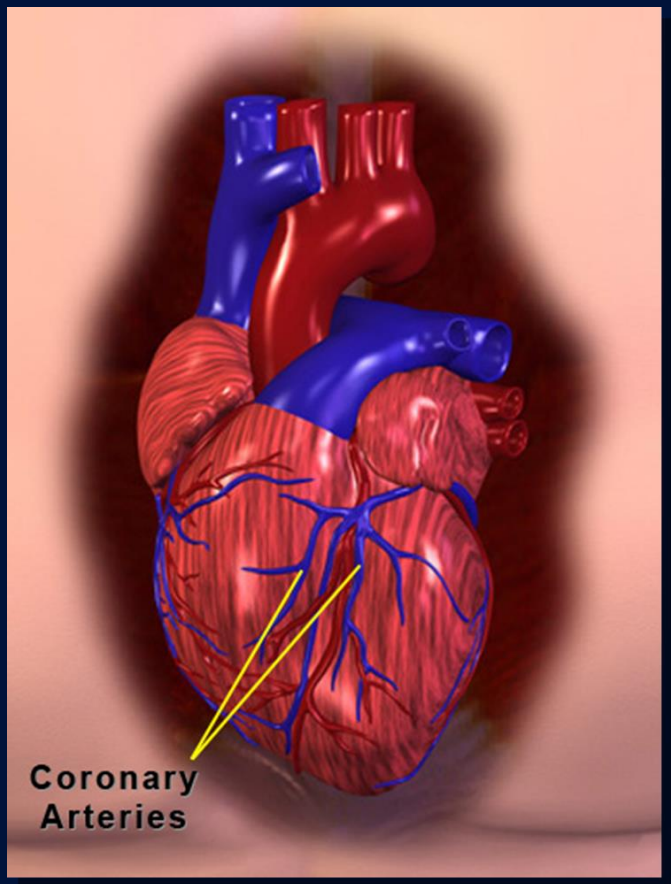
Heart Attacks

A heart attack occurs when the blood supply to part of the heart muscle is severely reduced or stopped. Common symptoms include:

- Pressure, fullness, squeezing or pain in the center of the chest that lasts more than a few minutes, or goes away and comes back.
- Pain spreading to arms, neck or shoulders
- Chest discomfort with lightheadedness, fainting, sweating, nausea or shortness of breath

Heart Attacks

A heart attack occurs when one of the coronary arteries that supply blood to the heart muscle, is blocked by an obstruction or a spasm.



Heart Attacks

When a person's heart stops beating, the victim is said to be in cardiac arrest.

CPR can keep the individual alive.

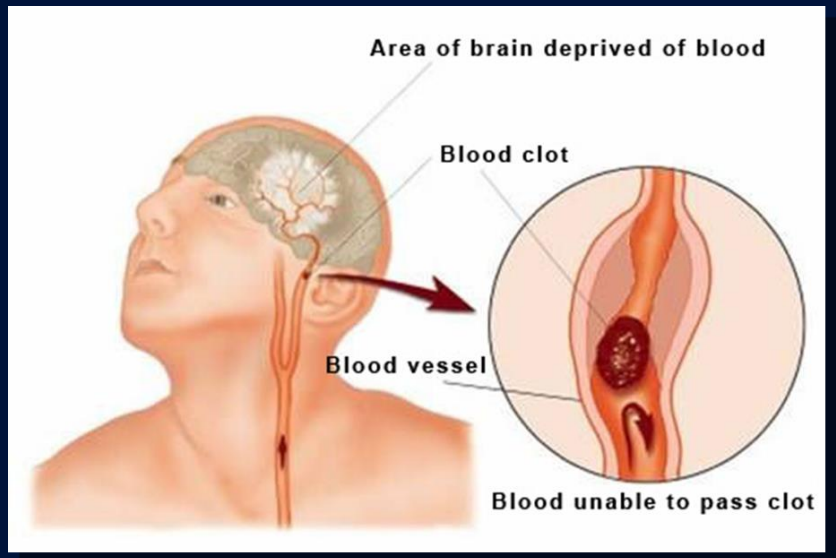
If a person has a heart attack, call emergency medical services (EMS).

Monitor the ABC's and give CPR as necessary.

Stroke

A stroke occurs in either of two situations:

- When blood vessels that deliver oxygen-rich blood to the brain rupture
- When a blood clot forms and blocks the flow of blood to the brain



Stroke

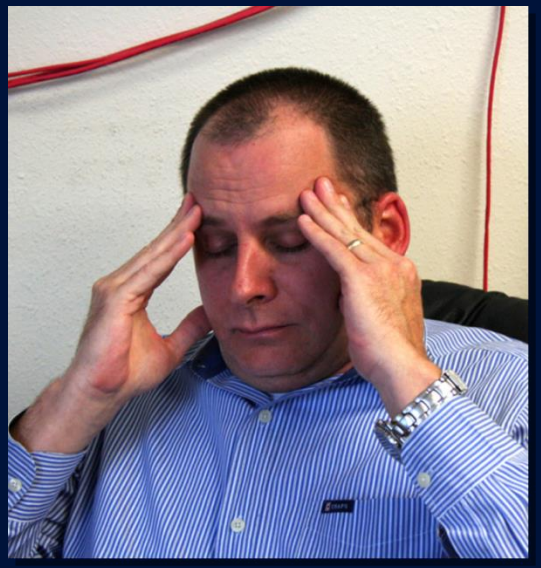
Common signs and symptoms of a stroke include:

- Paralysis on one side of the body
- Blurred or decreased vision; pupils of unequal size
- Problems speaking; slurred speech
- Difficulty breathing
- Mental confusion
- Dizziness or loss of balance
- Sudden, severe or unexplained headache

Stroke

If a person has a stroke, call EMS. Then:

- Lay victim down on one side and cover with blanket
- Monitor ABC's
- Give CPS as necessary



Automated External Defibrillators (AED)

The Automated External Defibrillator (AED) is a device that uses a computer chip to analyze the heart rhythm and determines whether a shock is needed.

Because they are designed to be very user-friendly, a person can be trained to effectively use an AED in just a few hours…

and some say it's easier than learning CPR.

Automated External Defibrillators (AED)

AEDs are becoming quite common.

Many airlines have installed AEDs on planes

Several cities have put them in places where there are likely to be lots of people, such as:

- Malls
- Arenas
- Stadiums

Controlling Bleeding

In an accident situation, you may encounter injured persons bleeding from wounds such as scrapes, cuts, punctures, tears or gashes.

Though minor wounds to the outer layer of skin do not bleed heavily, they still require cleaning to avoid infection.

Controlling Bleeding

Deeper wounds in which arteries and veins are cut can be life threatening.

There may be great loss of blood, and blood may pulse or spurt out of the wound.

Severe bleeding, or hemorrhage, can result in shock or death if not promptly treated. Stopping loss of blood is essential in these cases.

If too much blood is lost, even CPR won't keep the victim alive, because there won't be enough blood to deliver oxygen from the lungs to the body.

Direct Pressure

In most cases, direct pressure to a wound is the best way to control bleeding. Place a dressing over the wound and continue applying pressure. Bleeding should slow or stop within 30 minutes.

A dressing should be:

- As sterile as possible
- Larger than the wound
- Thick, soft and compressible
- Lint-free

If no dressing is available, use clothing, hands or fingers – whatever is the cleanest.

Stopping Infection

Even the slightest wound requires immediate cleansing, with soap and water.

Wait until the skin around the wound dries, then put on a bandage. Apply antiseptic cream if possible, then bandage.

Stopping Infection

Deep wounds, animal or human bites, and those contaminated by dirt, rust or other items require medical treatment.

If a wound contains glass or other objects stuck into the flesh, do not remove the object unless it washes out of the wound easily.

Controlling Bleeding to Extremities

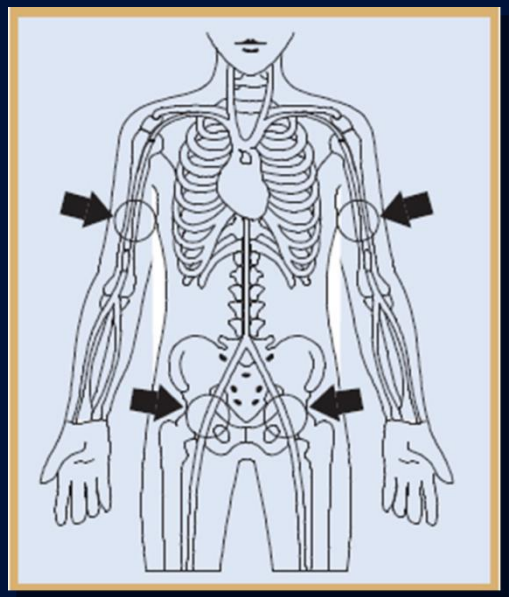
After initially applying direct pressure to a limb, you can apply a pressure bandage by wrapping a bandage snugly around a limb, using overlapping turns with a roll of gauze.

Do not tie it so tightly that it restricts blood flow to the lower limb.

You'll know it's too tight if fingers or toes turn blue or if there's no pulse below the dressing.

Pressure Points

In the case of severe bleeding that doesn't slow or stop using direct pressure, finger pressure may be applied to the pressure point between wound and heart.



Pressure points are locations on the body where arteries are close to the surface.

Applying pressure at these points can slow or stop the flow of blood through the artery.

Pressure Points

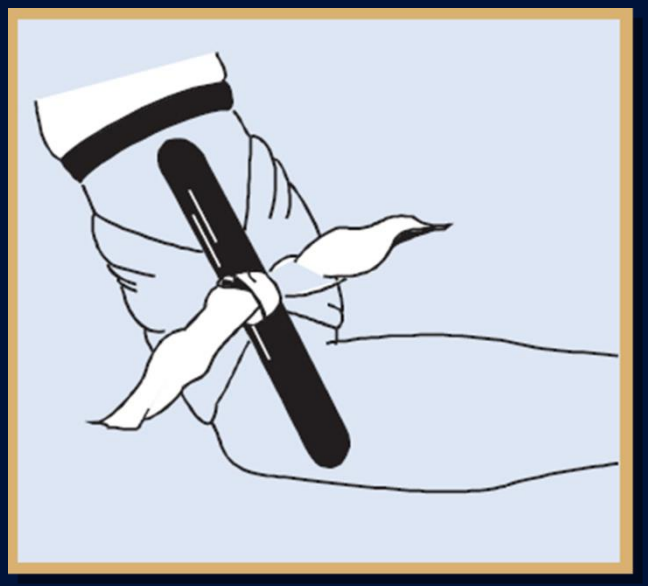
Caution….

It’s a good idea to have first aid training on pressure points before actually using this technique to stop bleeding.

Damage to healthy tissue can occur if it’s done incorrectly.

Tourniquet

If heavy blood loss continues, as from amputation, it may be necessary to use a tourniquet.

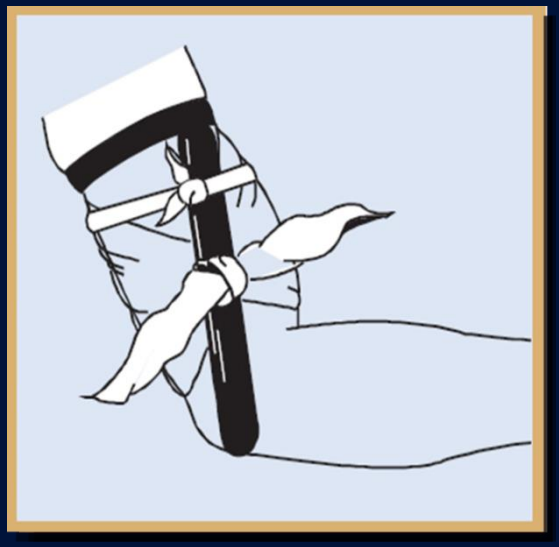


Caution: A tourniquet constricts the flow of blood below it and can kill the limb to which it is applied. Only use a tourniquet as a last resort, when the bleeding does not stop and the person's life is in danger.

Tourniquet

To apply a tourniquet, follow these steps:

1. Fold a cloth until it is approximately two inches wide and long enough to go around the injured limb. Tie the material in a loop and position it 2-4 in. above wound, but not over a joint.
2. Pass a rigid object, such as a stick, under the tourniquet loop and twist it until the bleeding stops
3. Tie off the end of the stick with cloth or string to prevent it from unwinding
4. Mark a “T” on the victim’s forehead to alert medical personnel victim has a tourniquet.



Controlling Bleeding to Head and Torso : Scalp

For wounds to the scalp, use a pressure dressing.

If brain tissue is exposed, tie the dressing loosely over the wound.

Do not press the brain tissue back into the open wound.

Controlling Bleeding to Head and Torso : Facial Injuries

Control bleeding from facial wounds by using a pressure bandage.

Position the victim to prevent him/her from breathing blood.

Victims of severe blows to the head should be kept under close observation.

Controlling Bleeding to Head and Torso : Chest Injuries

A chest injury may result in an open chest wound, which could lead to air leaking from a lung and the collapse of the lung.

If the victim is conscious, have him/her sit up, breathe out, and apply some material such as plastic wrap or foil to the wound to prevent leakage of air and slow blood loss.

Controlling Bleeding to Head and Torso : Abdominal Injuries

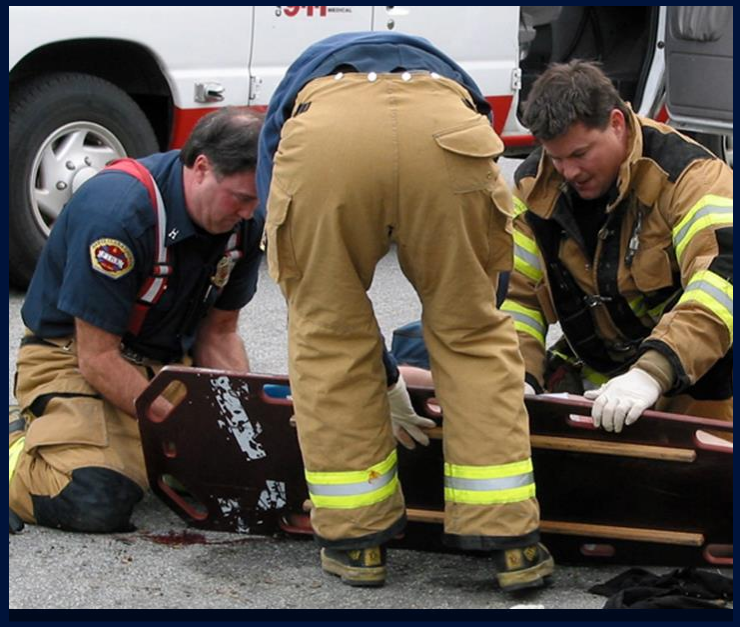
When an open abdominal wound has exposed visceral (internal) organs, cover the abdomen loosely with dressings.

Do not:

- Force the organs back into the body cavity
- Give victims with abdominal wounds any food or water

Treating for Shock and Immobilizing Fractures

When you treat someone for a severe injury, you must also treat them for shock, even if they show no signs of shock.



After treating for shock, take care of broken bones or suspected broken bones.

If there is a question of whether or not a bone is broken, treat it as if it were broken.

Shock

Shock from an injury is different from electric shock, although it can be brought on by electric shock, as well as:

- Blood loss
- Burns
- Psychological trauma
- Heart attack
- Other injuries involving pain

Signs of Shock

When a victim is in shock, the skin is pale or bluish and cold to the touch.

When the victim has dark skin, signs of shock show in the color of the mucous membranes on the inside of the mouth, under the eyelids or nail beds. Skin may be clammy from perspiration.

Other signs:

- Restlessness or nervousness
- Thirst
- Bleeding
- Confusion/loss of awareness
- Breathing rapidly
- Nausea and/or vomiting
- Blotchy around mouth & lips
- Fainting or blacking out

Treating Shock

To treat shock, goals are to:

- Improve circulation of the blood
- Ensure adequate oxygen supply
- Maintain normal body temperature

Treating Shock

Procedures for treating shock:

1. Position victim on his/her back, unless sitting makes breathing easier. If victim is vomiting, place on side.
2. Elevate victim's feet higher than the heart, unless there is an abdominal or chest wound, or unsplinted leg fracture.

3. Loosen clothing that may bind at neck or waist
4. Keep victim from becoming too cold or hot.

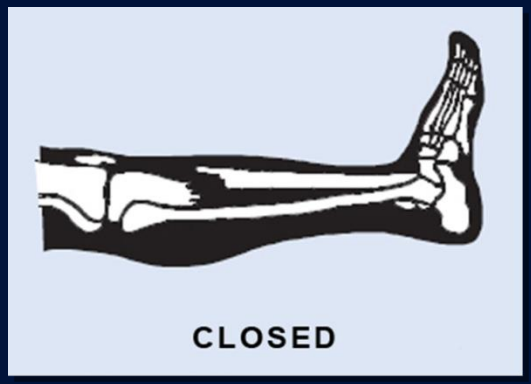
Fractures

Bone fractures resulting from falls are common injuries.

Sometimes it's obvious that a bone is broken because it breaks through the skin. Other times the area swells, discolors and there is unusual positioning of the limb.

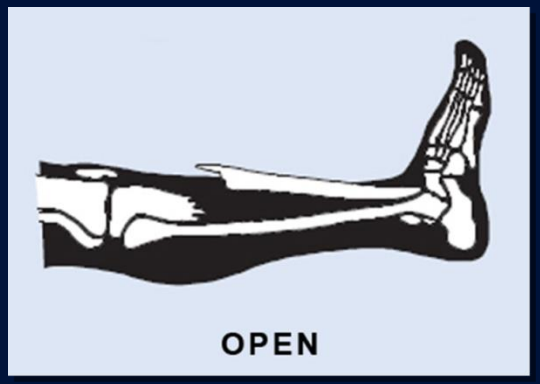
Fractures

Two types of fractures:



Closed/simple fracture

Bone does not penetrate skin



Open/compound fracture

Sharp edges of splintered bone cut through skin

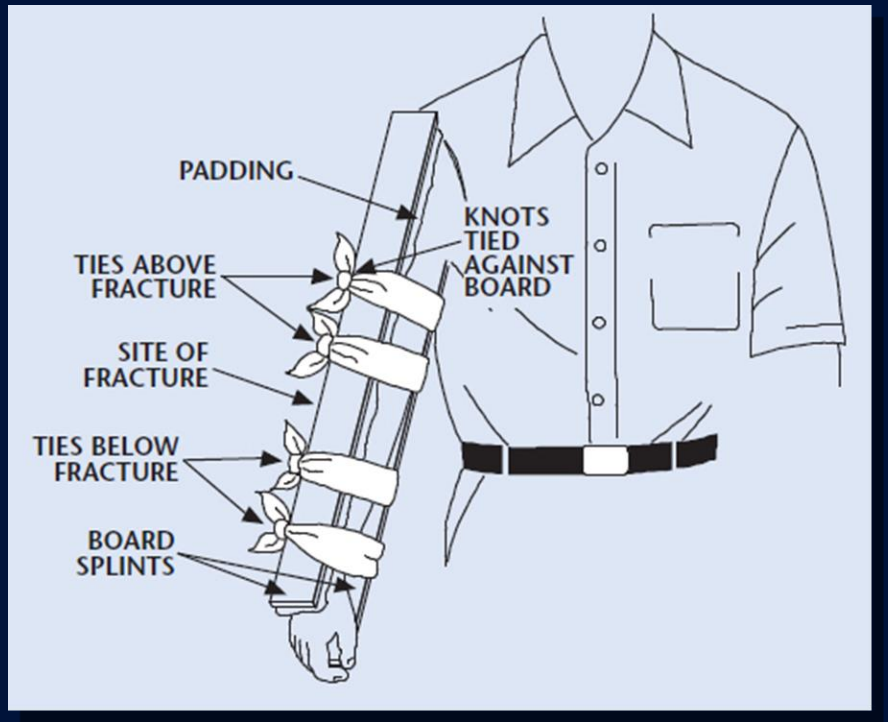
Fractures

Do's and Don'ts for Care of Fractures

DO:	DON'T:
Call for medical assistance immediately	Try to set the bone without medical assistance
Keep the victim from moving	Give stimulants if there is severe bleeding
Treat for shock while waiting for help	Put the victim in a car - it can turn a closed fracture into an open one

Splints

To prevent further damage to a fracture, immobilize the injured bone by using a splint.



For open fractures, control the bleeding before splinting.

Keep the exposed bone moist by covering it with a moist, sterile dressing.

Splints

Rules for splinting:

1. Pad all splinting material.
2. Splint the broken leg or arm in the position you found it.
3. Use splinting material that is long enough to immobilize the joint above and below the break.
4. Tie the splints above and below the suspected fracture.
5. Tie all knots on the outside of the splints.
6. Check that circulation is not restricted by splints tied too tightly.

Splints

If no splinting material is available, immobilize a leg fracture by placing padding between the injured leg and the uninjured leg.

The healthy leg is used as the splint, and legs are tied together above and below the break.

Slings

For arm fractures in which the entire arm is not splinted, use a sling to support the weight of the arm.

If necessary, pin the victim's shirttail up to serve as a field expedient sling.

Joint Injuries

Joint injuries occur when excess stress or strain is placed on the joint. Dislocations and sprains are the most common joint injuries.

Dislocation

Sprain

Joint Injuries

A dislocation occurs when a joint comes apart and stays apart with the bone ends no longer in contact.

Most commonly affected:

- Shoulder
- Elbow
- Finger
- Hips
- Kneecap
- Ankle

Immediate care should be immobilization and RICE, followed by medical attention.

Joint Injuries

A sprain is an injury to a joint in which the ligaments and other tissues are damaged by violent stretching or twisting.

- Attempts to move or use the joint increase the pain.
- Skin around the joint may be discolored due to bleeding from torn tissues.

Treatment = RICE and seeking medical attention

Muscle Injuries

Muscle injuries are as common as joint injuries. These can be very painful and need treatment as soon as possible.

The most common muscle injury is a strain.

Muscle Injuries: Strain

A strain, or muscle pull, occurs when a muscle is stretched beyond its normal range of motion, resulting in a tear.

Signs and symptoms:

- Sharp pain
- Extreme tenderness on touch,
- Slight swelling
- Difficulty moving or using muscle

Treatment = RICE

RICE: Procedures for Bone, Joint, and Muscle Injuries

RICE is the acronym for the first aid procedures of:

- **R**est
- **I**ce
- **C**ompression
- **E**levation

It's the primary treatment for bone, joint, and muscle injuries.

RICE: Procedures for Bone, Joint, and Muscle Injuries

- **R**est… Injuries heal faster if rested. Rest means the victim stays off the injured body part.
- **I**ce…Apply an ice pack to the injured area for 20-30 minutes every 2-3 hours during first 24-48 hours.
- **C**ompression…Wrapping tightly with an elastic bandage for 18-24 hours may squeeze some fluid and debris from the injury site, and also reduce swelling.
- **E**levation…The force of gravity pulls blood and other tissue to lower parts of the body. Elevating it counters this effect.

Questions?