

Emergency Procedures for the
Sports Chiropractor

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Module 3

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Bleeding and Shock

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Conditions with Possible
Serious Bleeding

- Significant mechanism of injury
- Poor general appearance of patient
- Assessment reveals signs of shock
- Significant amount of blood loss noted
- The blood loss is rapid.
- You cannot control external bleeding.

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Internal Bleeding

- Internal bleeding may not be readily apparent.
- Assess patient's
 - Mechanism of Injury
 - Nature of Illness

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Signs and Symptoms of Internal Bleeding (1 of 2)

- Ecchymosis: Bruising
- Hematoma: Bleeding beneath the skin
- Hematemesis: Blood in vomit
- Melena: Black, tarry stool

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Signs and Symptoms of Internal Bleeding (2 of 2)

- Hemoptysis: Coughing up blood
- Pain, tenderness, bruising, guarding, or swelling
- Broken ribs, bruises over the lower chest, or rigid, distended abdomen

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External Bleeding

- Hemorrhage = bleeding
- Body cannot tolerate greater than 20% blood loss.
 - 25% in children.
- Blood loss of 1 L can be dangerous in adults; in children, loss of 100-200 mL is serious.

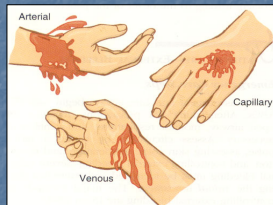
Children degenerate rapidly as opposed to adults.

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Characteristics of Bleeding

- Arterial
 - Blood is bright red and spurts.
- Venous
 - Blood is dark red and does not spurt.
- Capillary
 - Blood oozes out and is controlled easily.



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Controlling External Bleeding

- Follow PPE precautions
- Ensure patient has an open airway and adequate breathing
- Provide oxygen if necessary
- There are several methods to control bleeding

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Direct Pressure and Elevation

- Direct pressure is the most common and effective way to control bleeding.
- Apply pressure with gloved finger or hand.
- Slightly elevating a bleeding extremity often stops venous bleeding.
- Use both direct pressure and elevation whenever possible.
- Apply a pressure dressing.

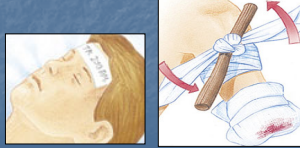
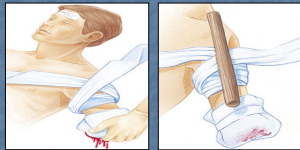


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Applying a Tourniquet

- Fold a triangular bandage into 4" cravat or use a commercial tourniquet.
- Wrap the bandage.
- Use a stick as a handle to twist and secure the stick.
- Write "TK" and time and place on patient.



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Tourniquet Precautions

- Place as close to injury as possible, but not over joint.
- Never use narrow material.
- Use wide padding under the tourniquet.
- Never cover a tourniquet with a bandage.
- Do not loosen the tourniquet once applied.

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Bleeding from the Nose, Ears, and Mouth

- Causes:
 - Skull fractures
 - Facial injuries
 - Sinusitis
 - High blood pressure
 - Coagulation disorders
 - Digital trauma

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Controlling a Nosebleed

- Follow PPE precautions.
- Help the patient sit and lean forward.
- Apply direct pressure by pinching the patient's nostrils.
 - Or place a piece of gauze bandage under the patient's upper lip and gum.
- Apply ice over the nose.
- Provide transport.



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Bleeding from Skull Fractures

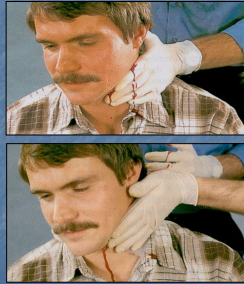
- Do not attempt to stop the blood flow.
- Loosely cover bleeding site with sterile gauze.
- If cerebrospinal fluid is present, a battle sign will be apparent behind ears.

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Penetrating Injuries of the Neck

- They can cause severe bleeding.
- The airway, esophagus, and spinal cord can be damaged from penetrating injuries.
- Direct pressure should control most bleeding.

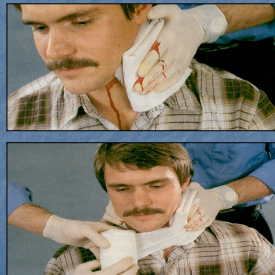


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Penetrating Injuries of the Neck

- Place a dressing on a neck wound using roller gauze.
- Wrap the bandage around and under the patient's shoulder.
- Provide prompt transport and treat for shock.



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Laceration of the Great Vessels

- The superior vena cava, inferior vena cava, pulmonary arteries and veins, and aorta are contained in the chest.
- Injury to these vessels can cause fatal hemorrhaging.
- Treatment includes:
 - CPR
 - Ventilatory support
 - Supplemental oxygen
 - Transport immediately.

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Major Arteries and Veins

- Aorta
- Pulmonary
- Carotid
- Femoral
- Brachial
- Radial
- Superior vena cava
- Inferior vena cava
- Pulmonary

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Emergency Medical Care

- Follow PPE precautions.
- Maintain airway and administer oxygen.
- Control external bleeding and care for any internal bleeding.
- Monitor and record vital signs.
- Elevate legs and maintain body temperature.
- Transport immediately to hospital.

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SHOCK

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Shock

- Circulatory system is unable to deliver sufficient blood to organs
- Many different causes
- Patients may have increased heart rate, respirations, and pale or blue skin.
- Children do not show decreased blood pressure until shock is severe.

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Shock

- State of collapse and failure of the cardiovascular system
- Leads to inadequate circulation
- Without adequate blood flow, cells cannot get rid of metabolic wastes

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Type's of Shock

- Cardiogenic
- Neurogenic
- Hypovolemic
- Hemorrhagic
- Septic
- Psychogenic
- Anaphylactic
- Diabetic
- Respiratory
- Metabolic

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Progression of Shock

- Compensated shock – The body senses the decrease in perfusion and attempts to compensate for it.
- Decompensated shock – The point when the body can no longer compensate for the lack of perfusion.
- Irreversible shock – When the body has lost the battle to maintain perfusion to the organ system. (Certain Death).

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When to Expect Shock

- Multiple severe fractures
- Abdominal or chest injuries
- Spinal injuries
- Severe infection
- Major heart attack
- Anaphylaxis
- Medical Emergencies

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Signs and Symptoms of Compensated Shock

- | | |
|-----------------------------|----------------------------|
| ■ Agitation | ■ Clammy skin |
| ■ Anxiety | ■ Pallor |
| ■ Restlessness | ■ Shallow, rapid breathing |
| ■ Feeling of impending doom | ■ Shortness of breath |
| ■ Altered mental status | ■ Nausea or vomiting |
| ■ Weak pulse | ■ Delayed capillary refill |
| | ■ Marked thirst |

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Signs and Symptoms of Decompensated Shock

- Falling blood pressure
- Labored, irregular breathing
- Ashen, mottled, cyanotic skin
- Thready or absent pulse
- Dull eyes, dilated pupils
- Poor urinary output

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Irreversible Shock

- This is the terminal stage of shock.
- A transfusion of any type will not be enough to save a patient's life.

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Emergency Medical Care (1 of 2)

- Make certain patient has open airway.
- Keep patient supine.



Control external bleeding.



Splint any broken bones or joint injuries.

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Emergency Medical Care (2 of 2)

- Always provide oxygen.
- Place blankets under and over patient.
- If there are no broken bones, elevate the legs 6" to 12".
- Do not give the patient anything by mouth.



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Cardiogenic Shock

- Heart lacks power to force blood through the circulatory system.
- Onset may be immediate or not apparent for 24 hours.

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Treating Cardiogenic Shock

- Patient may breathe better in a sitting or semi-sitting position.
- Administer high-flow oxygen.
- Assist ventilations as necessary.
- Have suction nearby in case the patient vomits.
- Transport promptly.

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Cardiovascular Causes of Shock (1 of 4)

- Pump failure
 - Inadequate function of the heart or pump failure.
 - Causes a backup of blood into the lungs.
 - Results in pulmonary edema.
 - Pulmonary edema leads to impaired ventilation.

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Cardiovascular Causes of Shock (2 of 4)

- Poor vessel function
 - Damage to the cervical spine may affect control of the size and muscular tone of blood vessels.
 - The vascular system increases
 - Blood in the body cannot fill the enlarged system.
 - Neurogenic shock occurs.

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Cardiovascular Causes of Shock (3 of 4)

- Content failure (hypovolemic shock)
 - Results from fluid or blood loss.
 - Blood is lost through external and internal bleeding.
 - Severe thermal burns cause plasma loss.
 - Dehydration aggravates shock.

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Cardiovascular Causes of Shock (4 of 4)

- Combined vessel and content failure
 - Some patients with severe bacterial infections, toxins, or infected tissues contract septic shock.
 - Toxins damage vessel walls, causing leaking and impairing ability to contract.
 - Leads to dilation of vessels and loss of plasma, causing shock.

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Treating Hypovolemic Shock

- Control obvious bleeding.
- Splint any bone or joint injuries.
- If no fractures, raise legs 6" to 12".
- Secure and maintain airway.
- Give oxygen as soon as you suspect shock.
- Transport rapidly.

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Noncardiovascular Causes of Shock

- Respiratory insufficiency
 - Patient with a severe chest injury or airway obstruction may be unable to breathe adequate amounts of oxygen.
 - Insufficient oxygen in the blood will produce shock.

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Noncardiovascular Causes of Shock

- Anaphylactic shock
 - Occurs when a person reacts violently to a substance.
 - Four categories of common causes:
 - Injections
 - Stings
 - Ingestion
 - Inhalation

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Treating Anaphylactic Shock

- Administer epinephrine.
- Provide prompt transport.
- Provide all possible support.
 - Oxygen
 - Ventilatory assistance

Anytime an Epi-Pen® is used, the patient MUST be transported to the hospital. Call EMS immediately.

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Noncardiovascular Causes of Shock

- Psychogenic shock
 - Caused by sudden reaction of the nervous system that produces a temporary, generalized vascular dilation.
 - Commonly referred to as fainting or syncope.
 - Can be brought on by causes ranging from fear or bad news to unpleasant sights.

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Treating Psychogenic Shock

- It is usually self-resolving.
- Assess patient for injuries from fall.
- If patient has difficulties after regaining consciousness, suspect another problem.

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Neurogenic Shock

- Damaged cervical spine which causes wide spread blood vessel dilation.
- Circulatory failure caused by paralysis of the nerves that control the size of the blood vessels.

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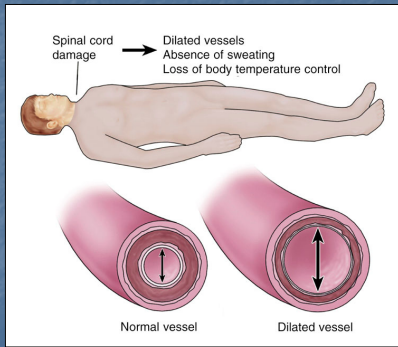
Treating Neurogenic Shock

- Maintain airway and assist breathing as needed.
- Maintain Body Temperature.
- Transport promptly.

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Perfusion



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SPLINTING

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Splinting

- Flexible or rigid device used to protect extremity
- Injuries should be splinted prior to moving patient, unless the patient is critical.
- Splinting helps prevent further injury.
- Improvise splinting materials when needed.

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General Principles of Splinting (1 of 3)

- Remove clothing from the area.
- Note and record the patient's neurovascular status.
- Cover all wounds with a dry, sterile dressing.
- Do not move the patient before splinting.

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General Principles of Splinting (2 of 3)

- Immobilize the joints above and below the injured joint.
- Pad all rigid splints.
- Maintain manual immobilization.
- Use constant, gentle, manual traction if needed.
- If you find resistance to limb alignment, splint the limb as is.

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General Principles of Splinting (3 of 3)

- Immobilize all suspected spinal injuries in a neutral in-line position.
- If the patient has signs of shock, align limb in normal anatomic position and transport.
- When in doubt, splint.

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Applying a Rigid Splint (1 of 2)

- Provide gentle support and in-traction of the limb.
- Another EMT places the rigid splint alongside or under the limb.
- Place padding between the limb and splint as needed.



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Applying a Rigid Splint (2 of 2)

- Secure the splint to the limb with bindings.
- Assess and record distal neurovascular function.



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Fractures of the Forearm

- Usually involves both radius and ulna
- Use a padded board, air, vacuum, or pillow splint.



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Hazards of Improper Splinting

- Compression of nerves, tissues, and blood vessels
- Delay in transport of a patient with a life-threatening condition
- Reduction of distal circulation
- Aggravation of the injury
- Injury to tissue, nerves, blood vessels, or muscle

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Environmental Emergencies

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Heat Related Illnesses.

- Heat illness
 - Common problem in hot humid weather.
 - Poor adjustment to hot weather, dehydration.
 - All heat related illnesses are preventable.
 - Adequate time to adjust to heat.
 - Adequate liquid intake.
 - Normal dietary intake.

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Heat Related Illnesses.

- Heat Cramps
 - Inadequate adjustment to hot weather. Generally not life threatening.
 - Symptoms
 - Muscles in arms and legs spasm.
 - Heavy sweating.
 - Treatment
 - Drink fluids.
 - Stretch/massage cramped muscles.
 - Rest in a cool environment.
 - Apply ice.

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Heat Related Illnesses.

- Heat Cramps
 - Prevention
 - Maintain adequate fluid intake.
 - 30 min before exercise drink 16 oz of fluids.
 - Drink 4 oz every 15 minutes during exercise.
 - After exercise drink 16 oz for every pound of body weight lost.
 - Increase fitness.
 - Wear light color/weight clothing.
 - Avoid alcohol, caffeine, coffee and soda.

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Heat Related Illnesses.

- Heat Exhaustion
 - Long exposure to hot/humid weather. Generally not life threatening.
 - Symptoms
 - Skin cool, pale and moist.
 - Headache, dizziness poor coordination.
 - Heavy sweating.
 - Treatment
 - Stop activity.
 - Rest in a cool area.
 - Drink water if conscious & cool towels/compresses
 - Refer to MD if athlete does not recover quickly.

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Heat Related Illnesses.

■ Heat Exhaustion

■ Prevention

- Maintain adequate fluid intake.
- 30 min before exercise drink 16 oz of fluids.
- Drink 4 oz every 15 minutes during exercise.
- After exercise drink 16 oz for every pound of body weight lost.
- Increase fitness.
- Allow time for rest and cool down.
- Wear light color/weight clothing.
- Avoid alcohol, caffeine, coffee and soda.

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Heat Related Illnesses.

■ Heat Stroke.

- Body's temperature control system shuts down. True medical emergency.

■ Symptoms

- Hot, Dry, Red skin.
- Rapid Pulse.
- No heavy sweating.
- Confusion, dizziness, possible unconsciousness.

■ Treatment

- Immediate emergency cooling. (Cool room, tub of ice)
- Transport immediately to hospital.
- Be alert for breathing and heart compromise.

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Heat Related Illnesses.

■ Heat Stroke.

■ Prevention

- Maintain adequate fluid intake.
- 30 min before exercise drink 16 oz of fluids.
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Cold Related Illnesses.

- Hypothermia – Internal body temperature falls below 95 degrees Fahrenheit. Usually as a result of prolonged exposure to cool/freezing temperatures.
 - Temperature need not be below zero.

**Different ways of losing body heat.
Heat travels from warm body to cold air.**

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Cold Related Illnesses.

- Conduction – Direct transfer of heat from body to colder object.
 - Warm hand touches cold metal bench.
- Convection – Heat is transferred to circulating air.
 - Standing outside in windy weather in light weight clothing.

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Cold Related Illnesses.

- Evaporation – Conversion of liquid to a gas. Requires heat, like when you sweat.
 - Coming out of water, feel sensation of cold as water evaporates.
- Radiation – Loss of body heat directly to cold environment.
 - Standing in a cold room .

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Cold Related Illnesses.

- Respiration – Body loses heat as warm air in lungs is exhaled.
 - See smoke when you breathe in cold weather.

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Cold Related Illnesses.

- Signs and symptoms of Hypothermia.
 - Blue lips/finger nails.
 - Shivering.
 - Active movement of muscles to create heat.
 - Body functions begin to slow down.
 - Poor coordination.
 - Memory loss.
 - Loss of sensation to touch.

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Cold Related Illnesses.

- Prevention of Hypothermia.
 - Prevent further heat loss.
 - Remove athlete from cold environment.
 - Do not let athlete walk.
 - Prevent further damage to feet.
 - Remove wet clothing, and wrap in dry blanket.
 - Put heat packs in groin, base of neck and arm pits.
 - Do not massage arms or legs.
 - No food or drink.

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Cold Related Illnesses.

- Frost nip
 - Long exposure to cold causes skin to freeze.
 - Deep tissue is unaffected.
 - Usually not painful.
- Trench foot
 - Prolonged exposure to cold water.

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Cold Related Illnesses.

- Frost bite
 - Most serious of cold injuries, because tissues are actually frozen.
- Emergency Care for frost bite
 - Remove from cold environment.
 - Handle injured part gently, prevent further injury.
 - Remove wet clothing.
 - Do not rub, break blisters or re-warm frost bitten areas.

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Cold Related Illnesses.

- Most cold injuries are confined to exposed parts.
 - Feet, ears, nose and face.
- Most heat loss from the body comes from the head and neck.

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Soft Tissue Injuries

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Soft-Tissue Injuries

- Closed injuries
 - Soft-tissue damage beneath the skin
- Open injuries
 - Break in the surface of the skin
- Burns
 - Soft tissue receives more energy than it can absorb

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Contusion

- Results from blunt force striking the body



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Hematoma

- Pool of blood that has collected in the body



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Abrasions

- Caused by friction



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Laceration

- Smooth or jagged cut



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Avulsion

- Separation of various layers of the skin



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Penetrating Wound

- Results from a sharp pointed object



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ICES

- Ice slows bleeding.
- Compression over an injury slows bleeding.
- Elevation above the level of the heart reduces swelling.
- Splinting decreases bleeding and reduces pain.

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Impaled Objects

- Do not attempt to move or remove the object.
- Control bleeding and stabilize object.
- Transport patient to the hospital carefully.

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Amputations

- Immobilize a partial amputation with bulky dressings and a splint.
- Wrap a complete amputation in a dry sterile dressing and place in a plastic bag.
- Put the bag in a container filled with room temperature water.
- Transport severed part with patient.

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Functions of Dressing and Bandaging

- Control bleeding
- Protect the wound
- Prevent contamination

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Dressing and Bandages

- Sterile dressings
 - Used to cover wounds.
- Bandaging
 - Used to keep dressing in place.

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