Unit 9

Bones, Joints & Muscle Injuries

Learning Outcomes
By the end of this unit the learner will be able to:
✓ Identify of the common signs and symptoms of a possible broken bone ✓ Provide essential first aid and advice for casualties with a variety of injuries ✓ Determine whether or not it is necessary to call the emergency services

Unit 9

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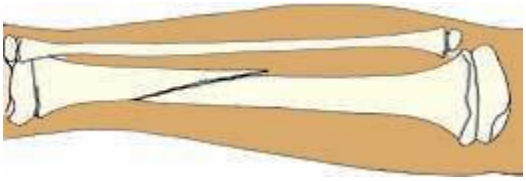
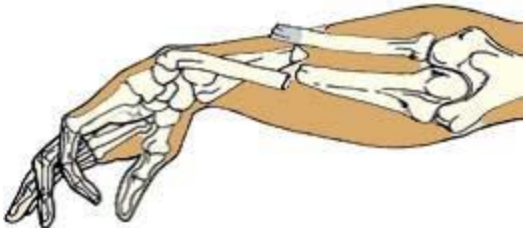
A dislocation is where a bone has been displaced from its normal position at a joint. A fracture is when a bone has been broken.

A fracture is termed:

- Closed where there is no break in the skin;



- Open where the bone end has broken the skin or a wound is present with the fracture.



The fractured or dislocated part should not be moved and first aid should be confined to providing soft padding and support in the position chosen by the patient.

Symptoms and signs – Not all may be present

- pain
- swelling
- deformity of the injured area (when compared with the uninjured side of the body)
- loss of normal function of the injured part
- discolouration of the skin (i.e. blueness) or bruising

- a wound if it is an open fracture
- altered sensation – e.g. 'pins and needles' – if a nerve is under pressure
- a grating sensation if injured bone ends are rubbing together
- patient may have heard/felt the bone break

How you can help

1. **Control any bleeding**
    - If a wound is present, check for any significant bleeding; and if bleeding, apply direct pressure around any exposed bones.
    - Apply padding around the wound, or above and below the wound. Apply a clean dressing loosely over the injured part.
2. **Immobilise the injured part**
    - Reduce the pain and the risk of further injury by supporting and immobilising the injured area. Usually this simply means supporting the injured part in a comfortable position.
3. **Make the patient comfortable**
    - Help the patient into the position of greatest comfort without any unnecessary movement. Use blankets, pillows or clothing for general comfort and support.
    - Place generous padding around the injured area and in the nearby hollows of the body, using soft towels, clothing, pillows or blankets, etc.
    - Where an ambulance is likely to be delayed for more than 1 hour immobilise the injured part. Specific immobilisation techniques for various injuries are outlined on the following pages.
    - Do not move any injured part unnecessarily.

Call 999 for an ambulance if the person is in severe pain, if it is a suspected rib or thigh fracture, or if there is severe bleeding that is uncontrolled.

- See a doctor or medical clinic with xray facilities for any other suspected fracture or dislocation

Cheekbone and Nose Injury

Fractures of the cheekbone and nose are usually the result of direct blows to the face. Swollen facial tissues are likely to cause discomfort, and the air passages in the nose may become blocked, making breathing difficult. These injuries should always be examined in the hospital.

Caution

- If there is clear fluid or watery blood leaking from the casualty's nose, treat the

casualty as for a head injury.
- Do not allow the casualty to eat or drink because an anesthetic may be needed.

Recognition

There may be:

- Pain, swelling and bruising
- Obvious wound or bleeding from the nose or mouth

Your Aims

- To minimize pain and swelling
- To arrange transportation to the hospital

What to Do

Gently place a cold compress, such as a cold pad or ice pack against the injured area to help reduce pain and minimize swelling. If the casualty has a nosebleed, try to pinch the nose to stop the bleeding. Arrange to take or send the casualty to the hospital.

Shoulder Injury

A fall onto the shoulder or an outstretched arm or a wrenching force may pull the head of the upper arm bone (humerus) out of the joint socket dislocation of the shoulder. At the same time, ligaments around the shoulder joint may be torn. This injury can be very painful. Some people experience repeated dislocations and may need a strengthening operation on the affected shoulder.

A fall onto the point of the shoulder may damage the ligaments that brace the collarbone at the shoulder. Other shoulder injuries include damage to the joint capsule and to the tendons around the shoulder; these injuries tend to be common in older people. To treat a shoulder sprain, rest the affected part, cool the injury with ice, and use a sling to provide comfortable support.

Caution

- Do not attempt to replace a dislocated bone into its socket.
- Do not allow the casualty to eat or drink because an anesthetic may be needed

Recognition

There may be:

- Severe pain, increased by movement; the pain may make the casualty reluctant to move
- Attempts by the casualty to relieve pain by supporting the arm and inclining the head to the injured side
- A flat, angular look to the shoulder

Your Aims

- To support and immobilize the injured limb
- To arrange transportation to the hospital

What to Do

- Help the casualty sit down. Gently place the arm on the injured side across her body in the position that is most comfortable. Ask the casualty to support her elbow on the injured side, or help her do it
- Support the arm on the injured side with an arm
- For extra support if necessary, secure the arm to the chest by tying a broad fold bandage around the chest and the sling.
- Arrange to take or send the casualty to the hospital in the position she finds most comfortable

Head Injuries in Babies and Children

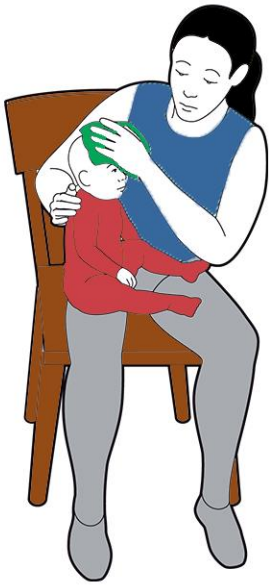
When babies start to crawl, they can bump their head on furniture or other objects and when starting to walk they may be unsteady and fall. Most of the time the injury will be minor and they might not even cry, but sometimes a bump on the head can be more serious.

Minor head injury
Signs and symptoms

Look for:

- bump or bruise to the head
- possible head wound
- dizziness or vomiting
- short period of unresponsiveness.

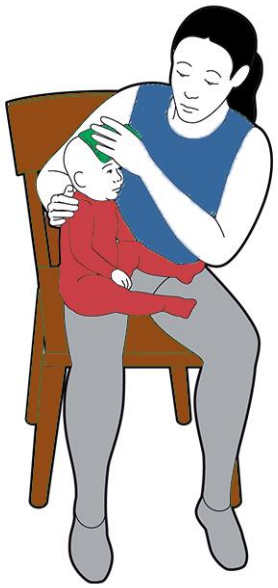
What to do



If you think your baby has a minor head injury sit them on your lap and hold something cold against the injury to help reduce the swelling, like an ice pack or a frozen bag of vegetables wrapped in a tea towel.

While you do this try to assess the baby's level of response using the AVPU scale.

- A – Are they alert? Are their eyes open?
- V – Can they respond to you if you talk to them?
- P – Does the baby respond to pain? If you flick the bottom of their foot, or pinch their ear lobe, do they respond to you by moving or opening their eyes?
- U – Are they unresponsive to all of the above? If they are unresponsive or you are worried, call 999 or 112 for emergency help.



If they have any wounds, treat them by applying direct pressure to the wound.

Keep checking the baby's level of response until they've recovered or medical help arrives.

Severe head injury

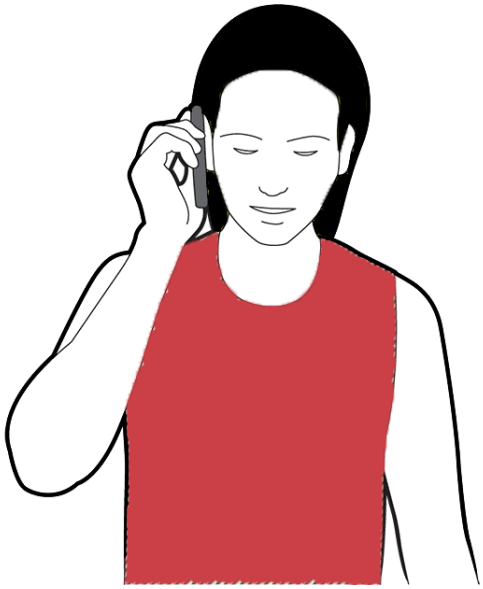
Signs and symptoms

Look for:

- drowsiness
- headache
- vomit
- if they suffer a seizure or fit

- unequal pupil size
- blood or blood stained watery fluid coming from the ear or nose
- unresponsiveness.

What to do



If you know that your baby has had a severe knock to the head or a minor head injury is getting worse, you should call 999 or 112 for emergency help and tell ambulance control that you suspect a serious head injury to your baby.

While you're waiting for help to arrive check your baby's breathing and ensure their airway is open and clear. If they stop breathing at any point prepare to start CPR. Try not to move your baby in case they have a spinal injury.

Splinter

Small splinters of wood, metal, or glass may enter the skin. They carry a risk of infection because they are rarely clean. Often a splinter can be successfully withdrawn from the skin using tweezers. However, if the splinter is deeply embedded, lies over a joint, or is difficult to remove, you should leave it in place and advise the casualty to seek medical help

Caution

- Ask the casualty about tetanus immunization.
- Seek medical advice if he is not sure whether he is up to date on his tetanus immunization

Your Aims

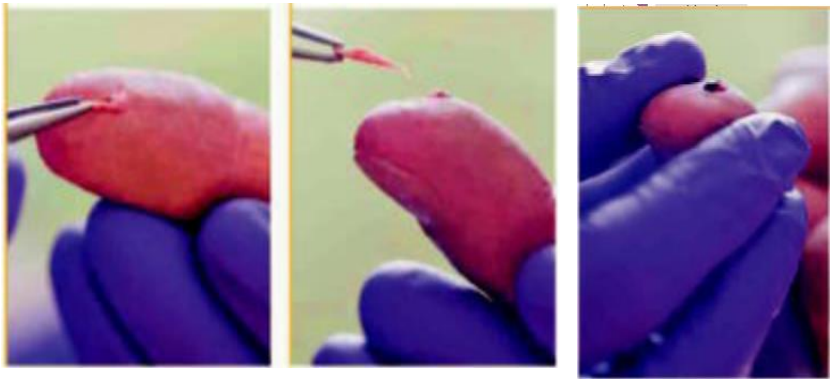
- To remove the splinter
- To minimize the risk of infection

Special Case Embedded Splinter

If a splinter is embedded or difficult to dislodge, do not probe the area with a sharp object, such as a needle, or you may introduce infection. Pad around the splinter until you can bandage over it without pressing on it, and seek medical help

What to Do

1. Gently clean the area around the splinter with soap and warm water.
2. Hold the tweezers close to the end for a better grip. Grasp the splinter with tweezers as close to the skin as possible.
3. Draw the splinter out in a straight line at the same angle that it went into the skin; make sure it does not break.
4. Carefully squeeze the wound to encourage a little bleeding. This will help flush out any remaining dirt.
5. Wash again with soap and water. Clean and dry the wound and cover with a dressing.



How to Treat Strains and Sprains

Injuries that involve body tissues apart from bone are generally classified as soft tissue injuries. Sprains, strains and bruises are all soft tissue injuries, although the cause and tissues involved in each injury are different.

A sprain is an injury that involves the ligaments and other soft tissues around a joint, such as an ankle or wrist.

A strain occurs away from a joint and involves a torn or overstretched muscle or tendon, commonly in the calf, thigh or lower back.

A bruise is a soft tissue injury that involves the skin and nearby tissues following a blow or other forces that break a blood vessel close to the surface of the body. Bruising may be seen with either a sprain or strain.

Symptoms and signs – Not all may be present

- pain at the site of the injury, often severe with a sprain or strain
- loss of power in the injured area, especially with a sprained joint.
- swelling of injured area

How you can help
Apply 'RICE': Rest, Ice, Compression, Elevation.

1. **Assist the Patient to rest in a Comfortable Position**

    - Assist the patient into the position of greatest comfort, generally sitting with support or lying down.
    - Rest for up to 24 hours is helpful but gentle movement of the affected joint should be encouraged after that time.

2. **Apply Ice for Significant Pain**

    - An ice pack will help to reduce pain. It can be applied for 10 to 20 minutes at a time and can be repeated once if pain persists.
    - To get the best effect from the ice and to avoid burning the skin, always wrap an ice pack in a damp cloth before applying it.
    - Avoid prolonged or direct application of ice.

3. **Consider Applying a Compressing Bandage**

- Use a good-quality crepe roller bandage on an injured limb.
- Ensure that firm and even pressure is applied to the injured part without slowing the circulation of blood to the fingers or toes of the affected limb.
- If the bandage increases the pain, DO NOT persist with it.
- A compressing bandage is not always necessary. However it may be useful if there is visible bruising.

4. **Keep the Injured area Elevated and at Rest and arrange for Medical Advice**

- Ensure rest with elevation of the injured area for the first 24 to 48 hours.
- Use simple pain relief such as paracetamol during the first 24 to 48 hours, following directions on the package.
- Patients who have significant loss of function or severe pain should be seen by a doctor or physiotherapist. All patients should be advised to see a doctor or physiotherapist if their symptoms are not improving within two days, or earlier if worsening.

Further Reading:

- ✓ *FrameWork: Your 7-Step Program for Healthy Muscles, Bones, and Joints Paperback – July 8, 2005 by Nicholas A. Dinubile (Author), William Patrick (Author)*
- ✓ *Netter's Concise Orthopaedic Anatomy, Updated Edition (Netter Basic Science) 2nd Edition by Jon C. Thompson MD (Author),2015*