



Company Name: \_\_\_\_\_ Job Site Location: \_\_\_\_\_

Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ Finish Time: \_\_\_\_\_ Foreman/Supervisor: \_\_\_\_\_

## **Topic 106: First Aid for Bone Breaks**

**Introduction:** A fracture is a break in a bone usually accompanied by injury to the surrounding tissue. Most fractures result from an injury, such as an automobile accident, sports, or a fall. A fracture occurs when the force against the bone is greater than the strength of the bone. The direction, speed, and power of the force affect the type and severity of the fracture, as do the age, resilience, and type of bone. Bones weakened by osteoporosis or tumors can be fractured with very little force. Bone breaks of the extremities (arms or legs) rarely pose a life threatening condition.

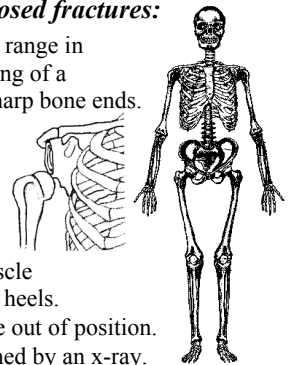
**If a bone is fractured,** immobilizing it will reduce the potential for further injury and pain to the injured person. Movement of the sharp ends of the bone near the muscle, blood vessels, and nerves can produce significant additional injuries.

**With broken bone injuries,** pain is usually the most obvious symptom. It may be severe and usually worsens with time and movement. Touching the area around the broken bone is also painful. Fractures usually cause swelling and bruising at the site. Depending on the type of fracture, a broken limb may appear deformed. The limb may not function properly, so that moving an arm, standing on a leg, or gripping with a hand is impossible. A fractured bone may cause blood to leak into the surrounding tissue or from the wound itself.



**Following are the different types of bone injuries, with the two general categories being open fractures and closed fractures:**

- **Closed fractures** are fractures in which the bone has been broken, but has not penetrated the skin. Closed fractures can range in seriousness from a hairline fracture (a crack along the shaft of the bone) to a comminuted fracture (splintering or crushing of a bone). Closed fractures have the potential to cause significant internal bleeding due to internal lacerations caused by sharp bone ends.
- **Open fractures** are breaks in which the sharp bone end has penetrated the skin's surface. Depending on the location, the laceration caused by the sharp bone may cause serious bleeding. Complications of open fractures include damage to the muscles and nerves, and bone infection. Open fractures are more likely to become infected than closed fractures.
- **Comminuted (pulverized) fractures** result when a severe, direct force causes several breaks, producing several bone fragments. These fractures may heal very slowly if the blood supply to part of the bone is interrupted.
- **Avulsion (separation) fractures** are caused by strong muscle contractions pulling off sections of bone to which the muscle tendon is attached. These fractures most commonly occur in the shoulders and knees but can also occur in the legs and heels.
- **Dislocations** are very painful and are identified by noticeable deformity because the bones on either side of the joint are out of position.
- **Strains and sprains** may resemble and feel like a closed fracture, and if severe, should be treated as such until determined by an x-ray.



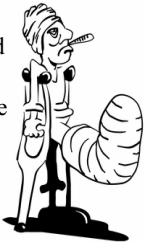
**If enough lateral force** was delivered to fracture a thigh bone (the femur, a bone covered by thick muscle), additional injuries may be present. For example, if a person falls "feet first" for some distance, the obvious injury would be to the feet, legs, and possibly the spine. However, secondary injuries could include abdominal injury, or head injury from tumbling forward after hitting the ground.

**An injured limb should be moved as little as possible. General first aid for suspected fractures includes the following steps:**

- **Visually evaluate** the injured person for swelling, lacerations, abrasions, bruising, color, or limb deformity.
- **Stop any bleeding** and treat the injured person for shock.
- **Immobilize** the injured extremity, including the joint above, and the joint below the injury site. Support the area of injury.
- **Never move** a suspected spinal or back injury.

**Open wounds** – The primary considerations in open fractures are to control bleeding and treat for shock. Open wounds should be covered with a sterile pressure dressing and pressure applied to further control bleeding. The limb should then be adequately immobilized.

**Conclusion:** If an accident involving broken bone injuries occurs (depending on the severity), contact Emergency Medical Services while rendering first aid. If open bleeding is involved, personal protective equipment for bloodborne pathogens should be used. Whatever the case, the injured person needs to be treated by a medical professional to determine the extent of the injury, avoid complications, and ensure proper healing. Broken bones require **at least 4 weeks** to heal solidly, although in older people, healing often takes longer. Once completely healed, the bone is usually strong and fully functional. Follow these guidelines to properly handle a broken bone injury.



### **Work Site Review**

Work-Site Hazards and Safety Suggestions: \_\_\_\_\_

Personnel Safety Violations: \_\_\_\_\_

**Employee Signatures:** \_\_\_\_\_  
 (My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)


**Foreman/Supervisor's Signature:** \_\_\_\_\_

*The first aid information provided is intended to be general in nature and is based upon the "best available" guidelines. No results either general or specific are represented or guaranteed. These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.*