BONE FRACTURE

A bone fracture is a complete or incomplete break in a bone. The same force that breaks the bone can also injure muscles, tendons, and other soft tissue surrounding the bone. Bones are normally strong and very hard. However, in the very young they are still soft and somewhat elastic. A bone fracture in a young child is often more of a hairline crack than a complete break. Older adults have much more brittle bones that are more likely to break all the way across. There are disease processes, such as osteoporosis, that can affect the bones as well. Such diseases play a significant role in how easily a fracture occurs, what type of fracture occurs and the healing process following a fracture. Fractures may occur with a fall, motor vehicle accident, a direct blow to the bone, or a twisting or pulling motion. Bones that fracture most frequently include multiple bones in the wrist, hand, and foot; the toe, finger, ankle, rib, hip, nose, spine, and *collarbone* (clavicle). Risk increases with osteoporosis and other bone disease; age; bone or bone marrow tumors; high-risk activities and reckless behavior; and anything that increases the risk of falls (especially in the elderly), such as certain medications (pain meds, tranquilizers, antihypertensives), decreased mobility, loss of sight or hearing abilities, and unsafe home environment.

The different types of bone fracture include:
Complete Fracture - Bone is completely separated
Incomplete (greenstick) Fracture - Bone is not completely separated
Comminuted Fracture - Several bone fragments at the fracture site
Open Fracture - Bone has broken the skin
Closed Fracture - Bone has not broken the skin
Compression Fracture - Extreme pressure on the bone
Impacted Fracture - Bone broken ends have been driven into each other
Avulsion Fracture - Occurs when force is applied to a strong tendon, causing it to pull and break off a portion of bone
Pathologic Fracture - Occurs with minor injury to weakened or diseased bone
Stress fracture - Occurs due to repeated and intense pressure, such as intense exercise, and causes only a crack.

Symptoms *may* include:
Pain at the fracture site made worse with movement
Swelling and tenderness near the fracture
Paleness of the skin
Deformity
Bleeding or bruising
Muscle spasm with movement
Numbness, tingling, or paralysis below a fracture
A sensation that the ends of the bone are rubbing together.
Loss of pulse below the fracture is an emergency! ***Seek immediate medical attention!***

Additional symptoms that may be experienced, depending on the severity and the site of the fracture, include:
Hand or foot - Fingers or toes may be cold or numb if nerves or blood vessels have been damaged.
Rib - Pain is worse with movement or when taking a deep breath.
Hip - Severe pain when trying to bear weight.
Nasal bone - Deformity of the nose, bleeding from the nose with possible dizziness or rapid pulse due to blood loss; and bruising around the eyes.

Ankle - Pain when trying to bear weight; a "loose-feeling" joint; a pop or tear may have felt when the fracture occurred.
Compression fracture of the spine - Pain or numbness in the arms or legs if the spinal cord was also compressed; digestive system problems.
Clavicle - Neck and shoulder soreness and bruising; numbness in the shoulder.

What *your* doctor can do:
Diagnose the fracture by taking your medical history, asking about your symptoms, performing a physical exam, and ordering X-rays of the injured site.
Occasionally, especially with stress fractures, an x-ray will not show the fracture. If a fracture is still suspected, another x-ray should be taken several days later and/or a bone scan or MRI done.
Treatment may include:
Realigning the ends of the bone (reduction) if the break is all the way through and the ends of the bone are not in line. Closed reduction is done without cutting into the fracture site. Your doctor will do this by feel with the help of x-rays. An open reduction is done by surgically exposing the fracture site and manipulating the bone.
Most fractures will need to be immobilized with a cast or splint after realignment.
A special brace may be ordered for a clavicle fracture to help keep the bones aligned.
A simple rib fracture does not require treatment, although a binder or chest wall support may be recommended.
Severe fractures will require hospitalization for reduction or surgical repair with some type of metal device - a pin, rod, or plate - inserted to help keep the bones in line.
Treatment for a hip fracture requires surgery and rehabilitative therapy. Hip fractures usually do not require casts.
Anesthesia may be necessary for surgical reduction; pain relievers and muscle relaxants may be prescribed.
Physical therapy may be recommended.
Your doctor may recommend vitamin or nutritional supplements

What *you* can do:
When a fracture or possible fracture occurs:
Give first aid for bleeding, cover all open wounds, and move as little as possible.
Make arrangements for transport to a hospital or other emergency facility, preferably by emergency medical personnel. Because realignment is more difficult after 6 hours, the bones should be reduced and immobilized as soon as possible.
Open fractures, in particular, require immediate treatment to decrease the chance of infection.
Home treatment:
Use RICE therapy (except for hip fracture): Rest the extremity, avoid weight-bearing activities such as walking or lifting. Ice the injury. Place a towel over the injury, then place a bag of ice over the towel for 15-20 minutes several times daily. Compression: maintain a "snug" but not tight wrap over the injury to help limit the swelling. Ace wraps are very helpful. Elevation: keep the extremity elevated, preferably above the level of the heart.
It is important to pay attention to your breathing with a rib fracture. Pain or a binder worn too tight can prevent deep breathing. Shallow breathing can result in pneumonia.
Follow your doctor's orders regarding exercise. Your doctor will inform you when it is safe to begin some type of exercise of the fractured limb. Long periods of rest can cause muscle loss, stiffness, and *edema* (accumulation of fluid in the tissues) but can be minimized with the right type of exercise.
Return to your normal activities as soon as possible.
Maintain a well-balanced diet. Good nutrition will help your bones to heal.

Prevention includes using protective sports gear and seat belts; early prevention and treatment of osteoporosis; and a safe home environment.

What you can expect:

Bone fractures are usually curable with prompt first aid and aftercare. When the bones do not move at the fracture site and the fracture site appeals normal on x-ray, healing is considered complete. In general, children heal very quickly; fractures take much longer to heal as you age.

Possible complications include shock from blood loss; nerve or blood vessel damage; obstruction of an artery; infection at the surgical or wound site; travel of a *fat embolus* (from the injury site) to the lungs or brain; failure to heal; arthritis in the affected area; permanent deformity; and loss of mobility.

Contact your doctor:

After treatment, if swelling begins above or below the fracture site; you have severe, persistent pain; numbness; or blue or grayish color changes develop at or below the fracture site.

For rib fractures, if you experience increasing or sudden difficulty breathing; bloody sputum, fever or if lips turn blue in color.

For nasal fractures, if you experience fever, headache, neck pain, a change in vision, or clear fluid leaking from the nose.

Seek immediate medical assistance if no pulse is felt below the level of the fracture, or if the fracture is open (the bone has broken through the skin)!