Your skeleton gives your body structure and support. It is made of living bone cells, living tissues, blood vessels, mineral deposits and water. Your skeleton also protects delicate organs, stores important minerals and produces new blood cells. Your bones are connected to each other with ligaments and tendons and are moved with muscles. Places where bones meet are called joints and most of these allow movement.

Although bones are very strong they often break or fracture. X-rays are often used to identify broken bones so they can be repaired. An x-ray is a picture taken of the bone on film using x-ray radiation. X-ray film is clear before being exposed to x-rays. The x-ray radiation turns the film dark. The darkest areas are where the most radiation hit the film. The whitest areas are where the most x-rays were absorbed by the body and did not hit the film. Bones absorb x-rays so they show up as white areas on the film. Sometimes a special dye called a contrast is given to the patient to make soft tissues (blood vessels, nerves, intestines, etc.) show up better.

The doctor who specializes in reading x-rays and other imaging media is called a Radiologist. For the next few days YOU will be the radiologist. You will be reading x-rays and studying them carefully. You will be responsible for making the diagnosis that determines the treatment of your patient. The best thing of all is that YOU (your secretary) get to bill your patients for your services.
The Bones

Skull

Clavicle (collarbone)

Scapula (shoulder blade)

Humerus

Radius

Ulna

Sternum (breastbone)

Ribs

Vertebral column (backbone)

Pelvic girdle

Femur

Patella

Tibia

Fibula

Tarsals

Metatarsals

Phalanges
The Joints

- **FIXED** - cranium
- **PIVOT** - neck
- **BALL AND SOCKET** - shoulder
- **FIXED** - sacrum, pelvis
- **HINGE** - fingers, mandible
- **HINGE** - elbow
- **GLIDING** - vertebrae, hands, feet
- **BALL AND SOCKET** - hips
- **HINGE** - knee
- **SWIVEL** - lower leg
- **pelvis**
The X-Ray Files

**CRANIUM** - front view

- Frontal Bone
- Orbit
- Nasal Cavity
- Mandible

**CRANIUM** - lateral view

- Parietal Bone
- Temporal Bone
- Occipital Bone
- Mandible
The X-Ray Files

Cervical Spine  C1 - C7
The X-Ray Files

Thoracic Spine  T1 – T12
The X-Ray Files

Lumbar Spine  L1 - L5 and Sacrum
The X-Ray Files

Rib Cage and Sternum
The X-Ray Files

Pelvic Girdle (Pelvis)
The X-Ray Files

Humerus

Shoulder and Elbow

Radius

Ulna
The X-Ray Files

Forearm and Lower Leg
The X-Ray Files

The Hand
The X-Ray Files

The Foot

PP = proximal phalanx
MP = middle phalanx
DP = distal phalanx
MT = metatarsal
cun = cuneiform

1st DP
2nd DP
3rd DP
4th DP
5th DP

1st MP
2nd MP
3rd MP
4th MP
5th MP

1st MT
2nd MT
3rd MT
4th MT
5th MT

1st cun
2nd cun
3rd cun

cuboid
talus
calcaneus

PP = proximal phalanx
MP = middle phalanx
DP = distal phalanx
MT = metatarsal
cun = cuneiform
The X-Ray Files

Ankle And Foot
The X-Ray Files

The Knee

AP view

Lateral view
The X-Ray Files - Fractures

A FRACTURE is a break in a bone. There are many different types:

Simple (Closed) fracture  
- bone is broken but does not puncture the skin

Compound fracture       
- bone is broken and punctures skin

Comminuted fracture     
- bone is broken in 3 or more fragments

Greenstick fracture      
- bone is bent and broken on one side only  
  Very common in soft bones of children

Hairline fracture        
- bone is cracked along a thin, long line

Spiral fracture          
- a break that circles around the bone
The X-Ray Files - Fractures

Torus fracture - end of bone is compressed and buckles common in soft bones of children

Salter - Harris fracture - bone is broken along the growth plate

Stress fracture - bone is partially broken by repeated stress.

Compression fracture - bone is flattened out of shape

Plastic deformity - bone is bent without any visible break.

Other injuries:

Dislocation - bones are separated at the joint

Subluxation - joints are not properly aligned
The X-Ray Files - Trauma

- Comminuted fracture of radius
- Compound fracture of tibia and fibula
- Fracture of humerus
- Greenstick fracture of tibia
- Compression fracture of hip
- Salter - Harris fracture of ankle
- Torus fracture
  Notice bump on ulna where force has caused bone to buckle
- Dislocated neck

Radiology Reference Guide
The X-Ray Files – Before/After Surgery

Internal Fixation of Fibula

Fusion of unstable cervical vertebra

Internal Fixation of Clavicle
The X-Ray Files – After Surgery

- Tibia / Fibula with hardware
- Radius and Ulna with elastic nail hardware
- Pelvis with hardware
- Spinal Fusion hardware
The X-Ray Files – Bone Disease

Osteoarthritis

Rheumatoid Arthritis in Hands

Osteoarthritis in Spine

Bone Cancer in Skull

Bone Cancer In Femur

Paget’s Disease with fracture to Humerus

Blount Disease (bowed knees) affecting the Tibia

Gout (soft tissue swelling) affecting the Great Toes

Frostbite to Fingers
The X-Ray Files - Fun Page

How am I Doing, Doc?

How many broken, diseased, damaged, dislocated and otherwise messed up parts can you find?