

## Osteoporosis

James Kellam MD

**Definition:** systemic skeletal disease, low bone mass, susceptibility to fracture

**Manifestations:** 1. insufficiency fracture – bone fails with normal activity  
2. fragility Fracture – fracture from standing height fall

**Prevalence:**  $2.1 \times 10^6$  fractures in 2011, increasing as population ages

**Health Problem:** 24% die within 1 year and 50% never recover pre-fracture ADLs

**Pathophysiology:** over activity of osteoclasts with age dependent slowing of bone formation

- Normal aging – male
- Lack of estrogen – Female post-menopausal acceleration

**Diagnosis:** DEXA of -2.5 SD below young adult value (WHO) or the occurrence of a fragility fracture

**Orthopaedic Issues:** Mechanical problem – bone fixation is a problem – structural weak  
Fracture care: delivery and prevention

**Surgical Treatment:** prompt focused pre-op evaluation, early surgery, post op weight bearing  
Displaced Femoral necks – arthroplasty  
Intertrochanteric fractures – IM nails  
Periprosthetic fractures – protect whole bone, weight bearing locking plates, IM nails  
Upper extremity – may need augmentation

**Fragility Fracture System Care:** improve delivery – better outcomes

1. Acute Care Fragility Fracture Service – focused appropriate care, co-management, pain and delirium control, bone health assessment, data driven
2. Established post-acute care plans
3. Bone Health Management – establish a system to assure patient is followed to prevent future fractures (secondary prevention)
4. Primary prevention – not normally ortho role but <20% are treated,
5. Falls prevention programs are integral to bone health

## Medical Management

1. DEXA for diagnosis and follow treatment – 1 to 2 years
2. Antiresorptive medications – stop bone resorption(osteoclast), first line Alendronate, zoledronic acid, denosumab
3. Bone forming (anabolic) for severe osteoporosis, failure of antiresorptives Teriparatide, abaloparatide