Osteoporosis

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**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:** 2.1X10^6 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