Risk Factors for Osteoporotic fractures

- **Non-modifiables**
  - Personal Hx of Fracture as an adult
  - Family Hx of fracture
  - Caucasian race
  - Female sex
  - Dementia
  - Poor health/frailty

- **Potentially modifiable**
  - Current smoking
  - Low body weight (<127 lbs)
  - Estrogen deficiency: early menopause, ovariectomy or prolonged amenorrhea
  - Low calcium intake
  - Alcoholism
  - Impaired eyesight
  - Recurrent falls
  - Inadequate physical activity
  - Poor health/frailty
Diseases associated with increased risk for Osteoporosis

- Acromegaly
- Addison’s disease
- Amyloidosis
- Ankylosing spondylitis
- COPD
- Cushing’s syndrome
- Gastrectomy
- Epidermolysis bullosa
- Hypogonadism
- Hemochromatosis
- Hemophilia
- Severe liver disease
- Hyperparathyroidism
- IDDM
- Lymphoma, leukemia
- Multiple sclerosis
- Plasma cell disorders
- Nutritional disorders
- Osteogenesis Imperfecta
- Pernicious anemia
- Rheumatoid arthritis
- Sarcoidosis
- Thyrotoxicosis
- Thalassemia
- Tumor secreting PTHrp
Drugs associated with an increased risk of Osteoporosis

- Aluminum
- Anticonvulsants
- Cigarette smoking
- Cytotoxic drugs
- Excessive alcohol
- Excessive thyroxine
- Glucocorticoids
- Adrenocorticotropin
- GnRH agonists
- Heparin
- Coumadin
- Lithium
- Premenopausal tamoxifen use
WHO Definitions

- Normal: T score of +1 to –1.0
- Osteopenia: T score –1.0 to –2.5
- Osteoporosis: T score –2.5 or more
- Established osteoporosis: women with low bone density and a fracture
## Review of Fracture Trials

<table>
<thead>
<tr>
<th></th>
<th>X-ray Fx</th>
<th>Clinical Hip Fx</th>
<th>Clinical Spine Fx</th>
<th>Clinical non-spine Fx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alendronate</strong></td>
<td>++ 56% reduction</td>
<td>++ (FN T=-2.5) 51% reduction</td>
<td>++, 50%-90% reduction</td>
<td>++ 45-60% reduction</td>
</tr>
<tr>
<td><strong>Etidronate</strong></td>
<td>+</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Risedronate</strong></td>
<td>++ 51% reduction</td>
<td>++ (FN T=-3.0) 39% reduction</td>
<td>+ 50-85% reduction</td>
<td>++ (39% reduction)</td>
</tr>
<tr>
<td><strong>Estrogen</strong></td>
<td>NS</td>
<td>ND</td>
<td>NS</td>
<td>+/-</td>
</tr>
<tr>
<td><strong>Raloxifene</strong></td>
<td>++ (50% reduction)</td>
<td>NS</td>
<td>+</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Calcitonin</strong></td>
<td>+ (36% reduction at 5 yrs)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

Hochberg MC, Drugs and Aging 17:317-30, 2000
Universal Recommendations

♦ Advise all patients to obtain an adequate intake of **dietary calcium**:
  – Premenopausal women 1000-1200 mg
  – Postmenopausal Women 1500 mg/day

♦ **Vitamin D**
  – 400 IU day
  – 800 IU day in older adults, chronically ill, housebound or institutionalized

♦ Regular weight bearing exercise

♦ Avoid tobacco use and alcohol use