



Genworth®
Financial

Long Term Care International Forum

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Osteoporosis - Defined

A disease characterized by a reduction in bone mass and structural deterioration of bone tissue leading to bone fragility and increased risk of fracture.

Osteoporosis – Fast Facts

- 44 million in US at risk; 10 million with osteoporosis
- 55% those >50
- Affects 20% females >45
- Affects 40% females >70
- Female:male ratio 4:1
- Higher frequency in Caucasian and Asian populations
- 50% women >50 will suffer an OP related fracture sometime in their remaining life
- 1.5 million fractures/year
 - 700,000 spinal
 - 300,000 hip
 - 250,000 wrist
- Estimated cost \$17.1 billion (2001)

<http://www.osteoporosis.org/newfile.asp?doc=fast&doctype=HTML+Fact+Sheet>

Osteoporosis/Fracture Risk

Factors

■ Major Risk Factors

- Current smoker
- History of fracture as an adult
- History of fragility fracture in a first-degree relative
- Low body weight (<127 lb)
- Oral glucocorticoid use >3 mo

■ Additional Risk Factors

- ETOH (>2 drinks/d)
- Dementia
- Estrogen deficiency at an early age (<45)
- Impaired vision
- Low lifetime calcium intake
- Low physical activity

- Subjective “poor” health/fragility

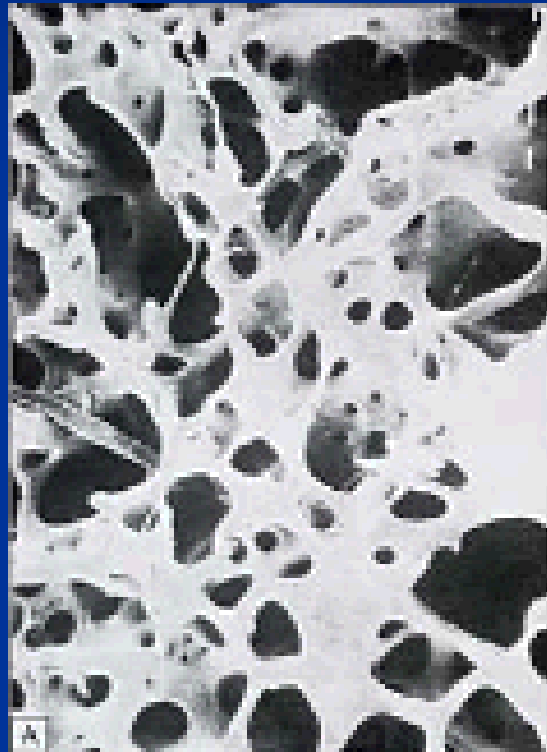
National Osteoporosis Foundation. Physician's Guide to Prevention and Treatment of Osteoporosis. 2003

Bone Metabolism

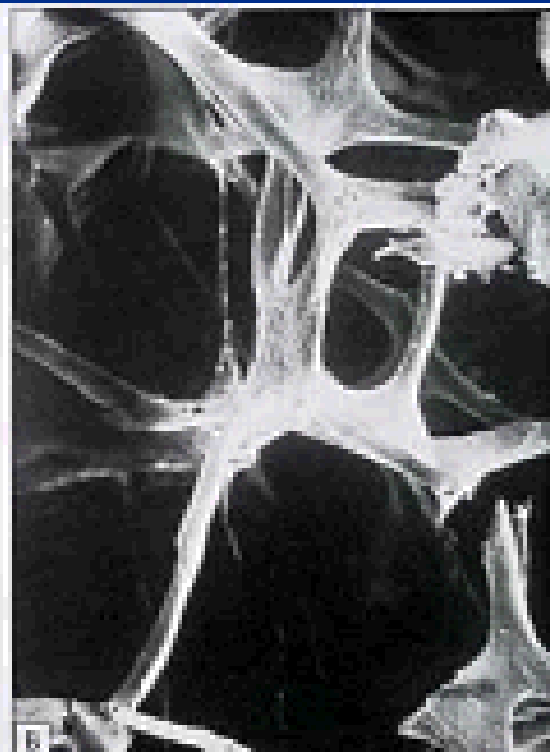
- Bone Is a Living Tissue
- Composed of Collagen and Calcium Phosphate
- Constant Resorption and Formation
- Peak Bone Mass Age 30
- Osteopenia/Osteoporosis When Resorption Exceeds Formation
- Most Rapid Bone Loss First Few Years After Menopause

Osteoporosis

Normal Bone



Osteoporotic Bone



<http://www.parathyroid.com/images/boneDensity.gif>

Osteoporosis - Diagnosis

- DXA – Dual Energy X-ray Absorptiometry
 - Spine, Hip, Wrist
 - Excellent For Diagnosis and Follow Up
 - Low Radiation
- pDXA – Peripheral Dual Energy X-ray Absorptiometry
 - Wrist, Heel, Finger
- QUS (Quantitative Ultrasound)
 - Heel
 - Inexpensive/Portable
 - No Radiation
 - Low Precision
- QCT (Quantitative Computed Tomography)
 - Spine, Hip
 - Expensive

OP - Classification (World Health Organization)

- Normal
 - T Score -1 or Above
- Osteopenia
 - T Score Between -1 and -2.5
- Osteoporosis
 - T Score at or Below -2.5
- Severe Osteoporosis
 - T Score at or Below -2.5 With a Fracture

Osteoporosis - Symptoms/Complications

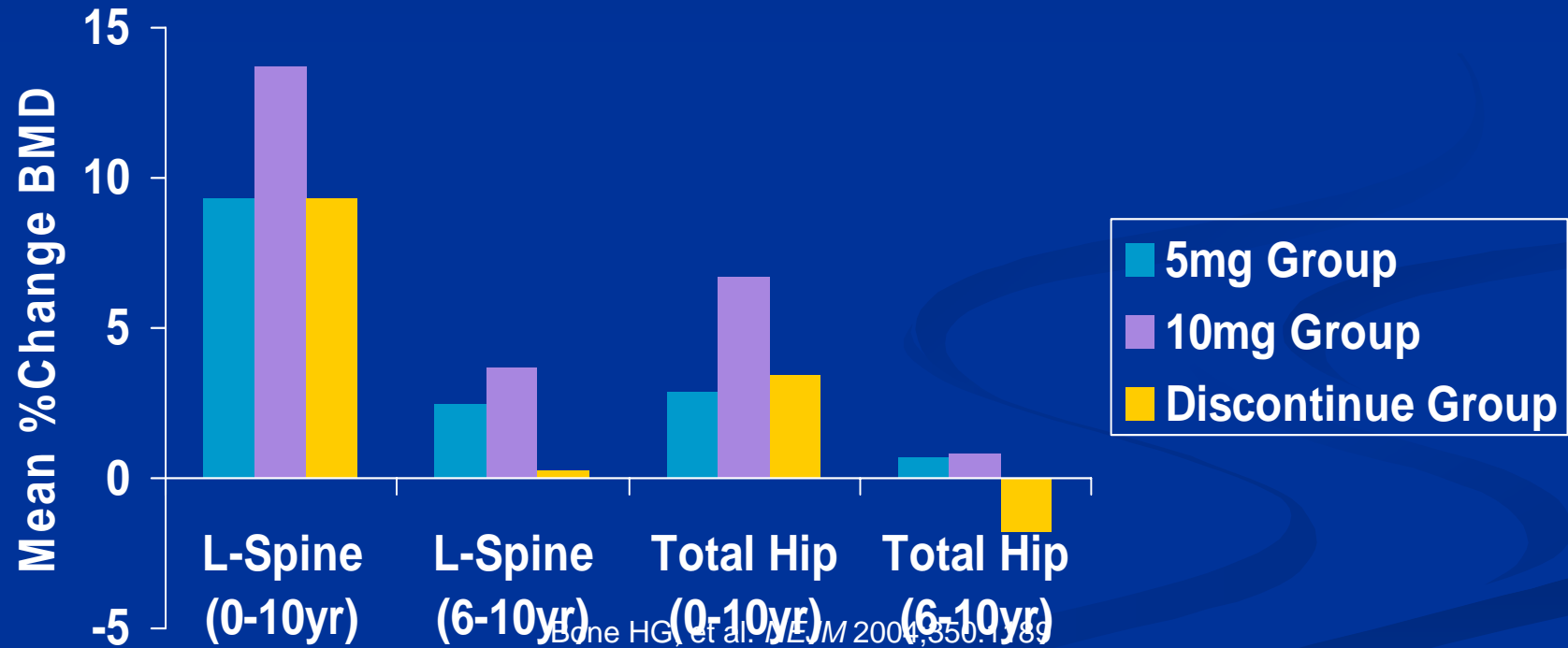
- Wrist Fractures (250,000)
 - Most Common Fracture Age <75
 - May Be An Early Warning Sign of OP
- Hip Fractures (300,000)
 - 90% Underlying Osteoporosis
 - 15-25% in LTC Facility One Year After Fracture
- Spine Fractures (700,000)
 - Compression Fractures
 - Most Common Form Osteoporotic Fracture
 - Chronic Pain
 - Pulmonary Compromise
 - Often Discovered Incidentally

Osteoporosis - Treatment

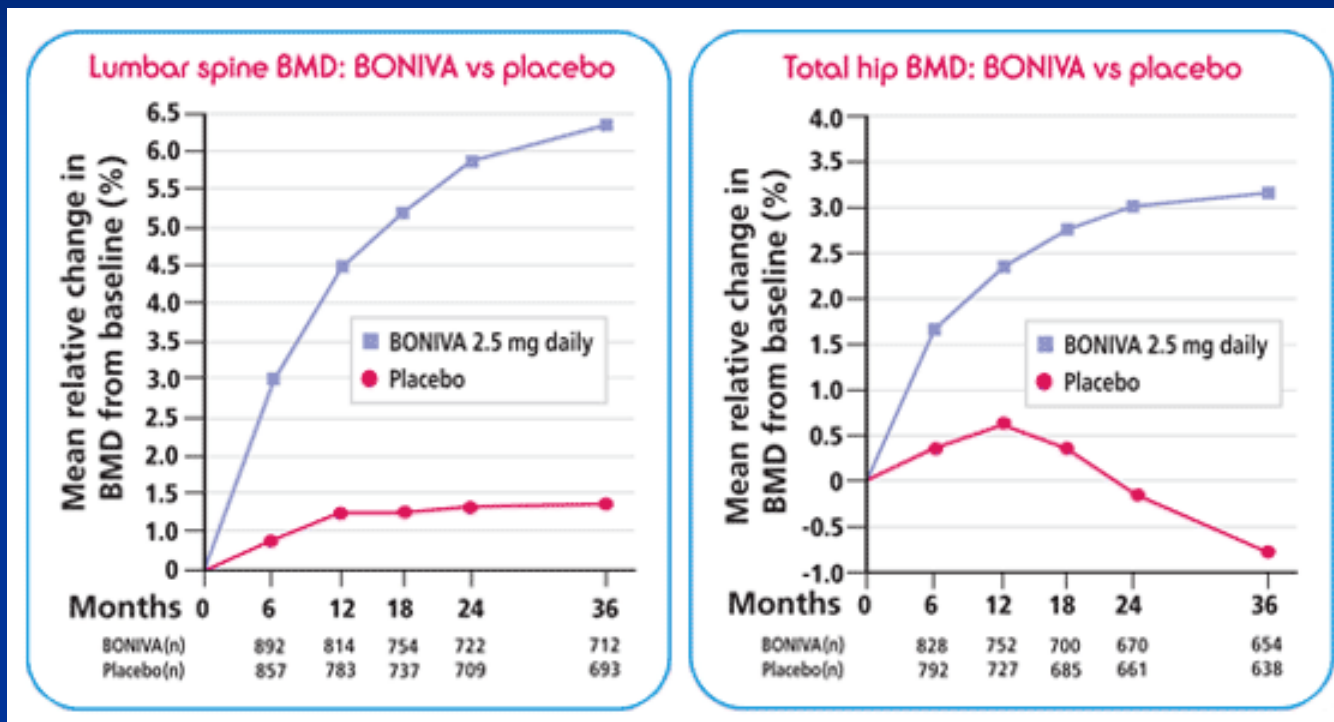
- Fosamax®(alendronate)
 - Increases Bone Density
 - Prevention and Treatment
- Actonel®(risedronate)
 - Similar to Fosamax®
- Boniva®(ibandronate)
 - Once monthly dosing
- Evista®(raloxifene)
 - Postmenopausal OP
 - Estrogen Receptor Modulator – Reduces Bone Loss
- Calcitonin (Injection/Nasal Spray)
 - Women >5yrs Post Menopause
- Forteo®(teriparatide)(Injection)
 - Those with High Fracture Risk
- Hormonal Therapy
 - Estrogen Therapy

Osteoporosis – Alendronate Treatment

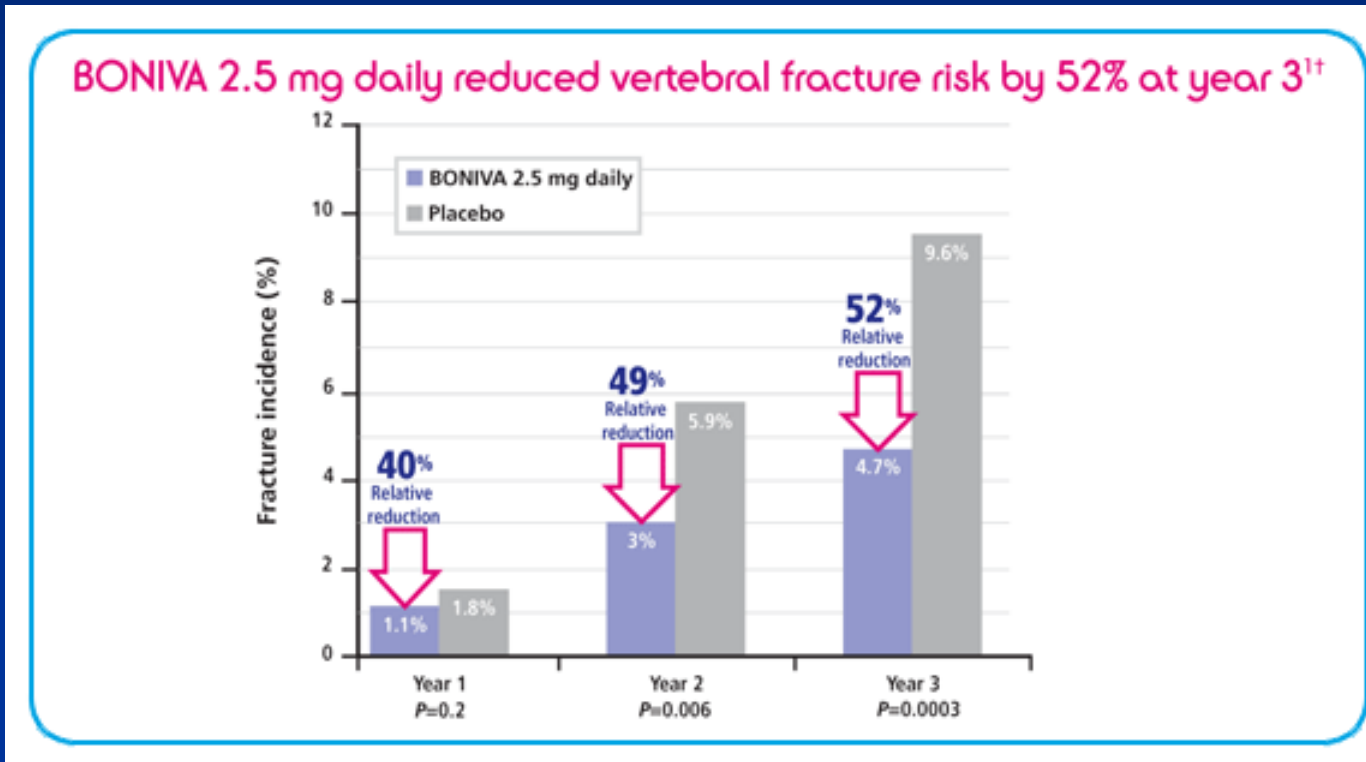
Alendronate 10 Year Experience



Osteoporosis – Treatment Efficacy



Osteoporosis – Treatment Efficacy



Osteoporosis – Treatment

Efficacy

	6 Month	1 Year	2 Years	3 Years	4 Years	5 Years	6-7 Years
Alendronate		□ †	□ †	‡ □ †	‡		
Risendronate	□ †	‡ □ †	‡ †	‡ †		‡ †	‡
Ibandronate			‡	‡ □			
Raloxifene		□	□	‡ □	‡		
HRT							□ †
Calcitonin				‡		‡	
Teriparatide			‡ †				

‡ = morphometric vertebral fx; □ = clinical vertebral fx; † = non-vertebral fx

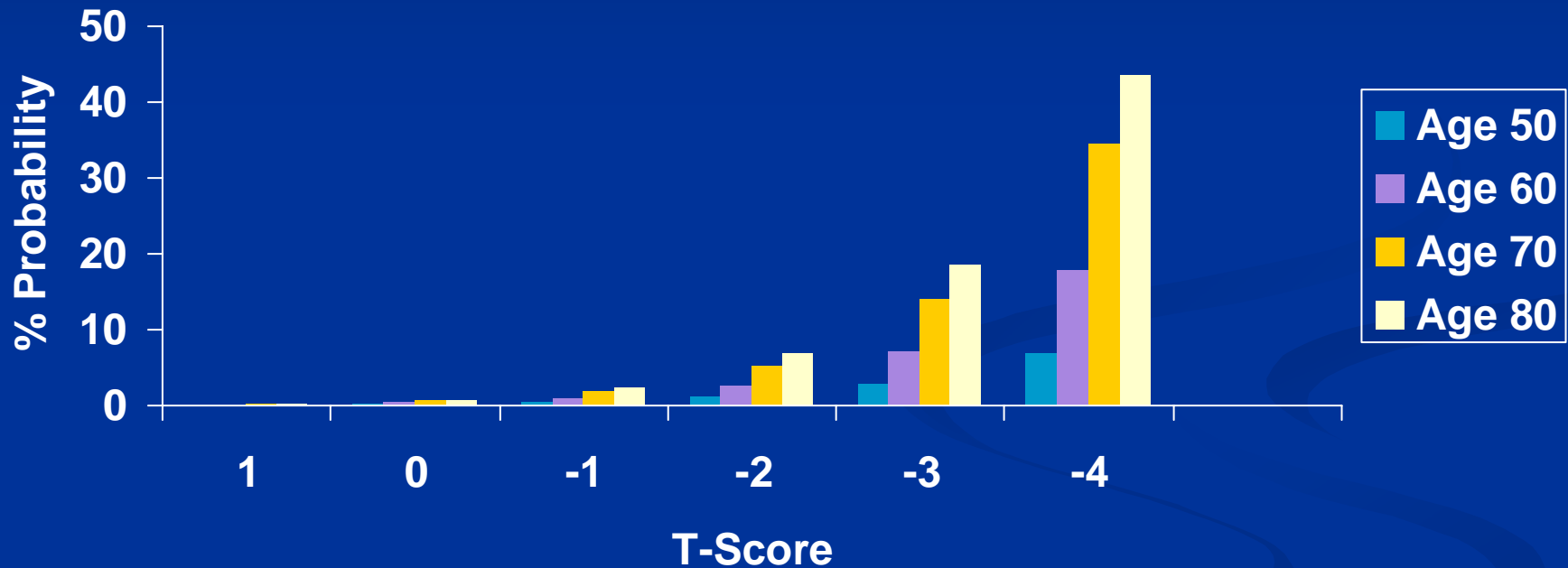
Osteoporosis - Prevention

- Calcium (1200mg/day); Vitamin D (400-800IU/day)
- Exercise – Weight-Bearing Exercise
(Walking, Jogging, Hiking, Tennis, Dancing)
- No Smoking
- Alcohol Moderation
- Fall Prevention

Risk Assessment

BMD and Fracture Risk

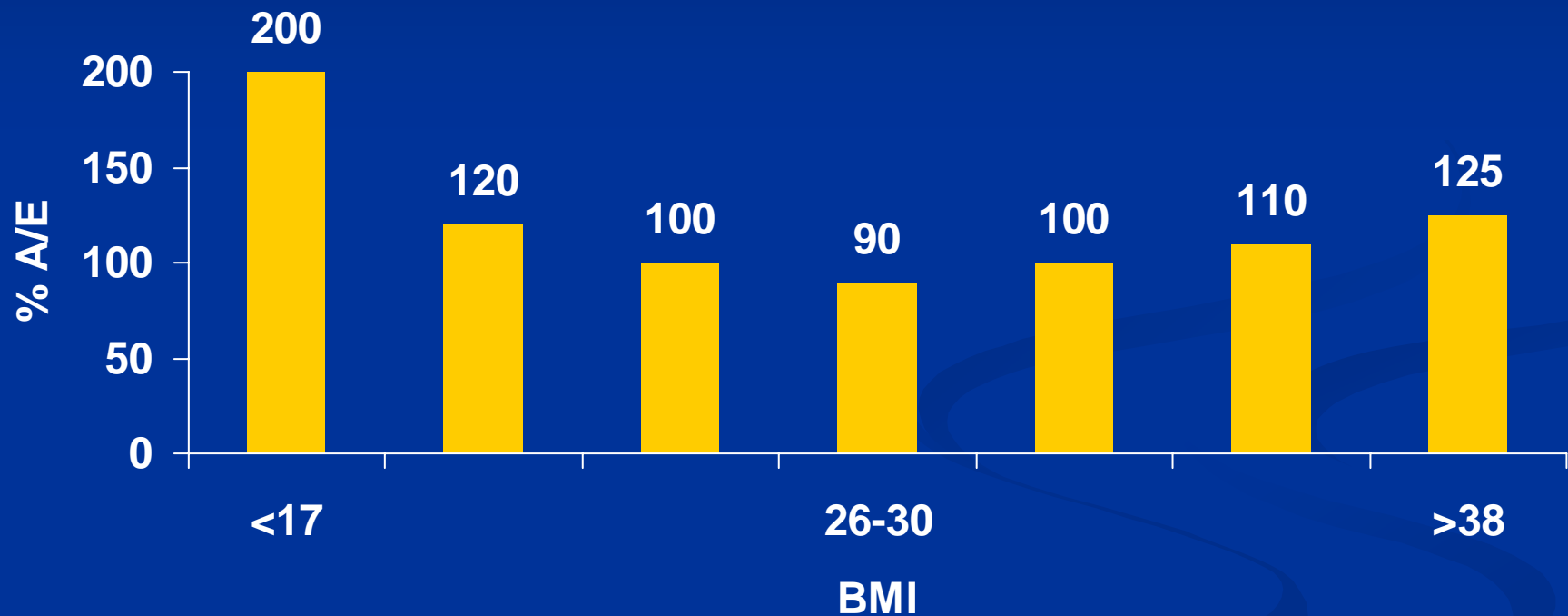
Ten-Year Probably Hip Fracture - Women



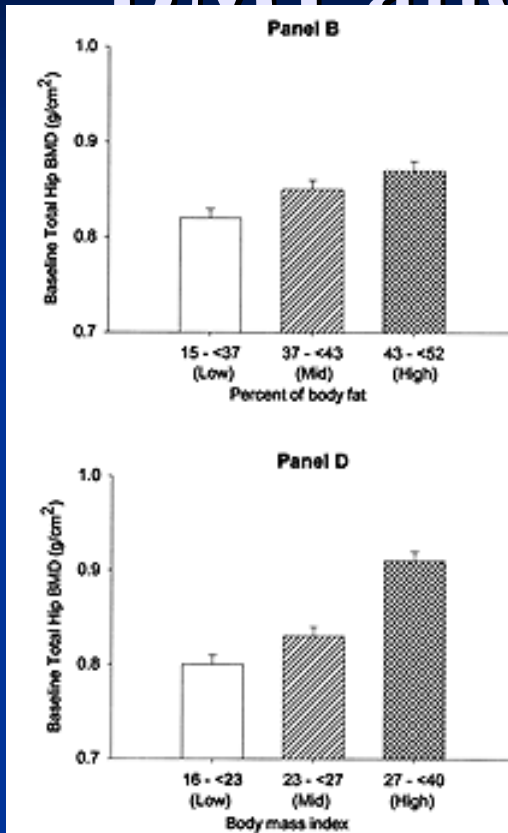
Johnell, O, et al. *J Bone Miner Res* 2005;20:1185

BMI and Claims Experience

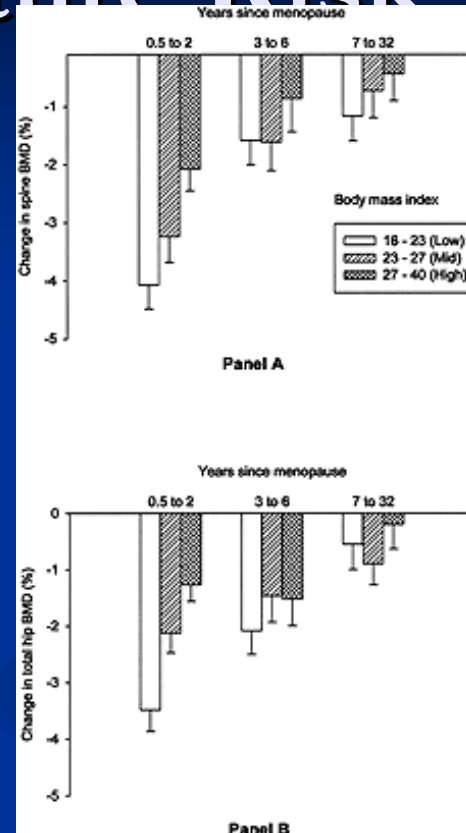
Relative Claims Performance



BMI and Fracture Risk



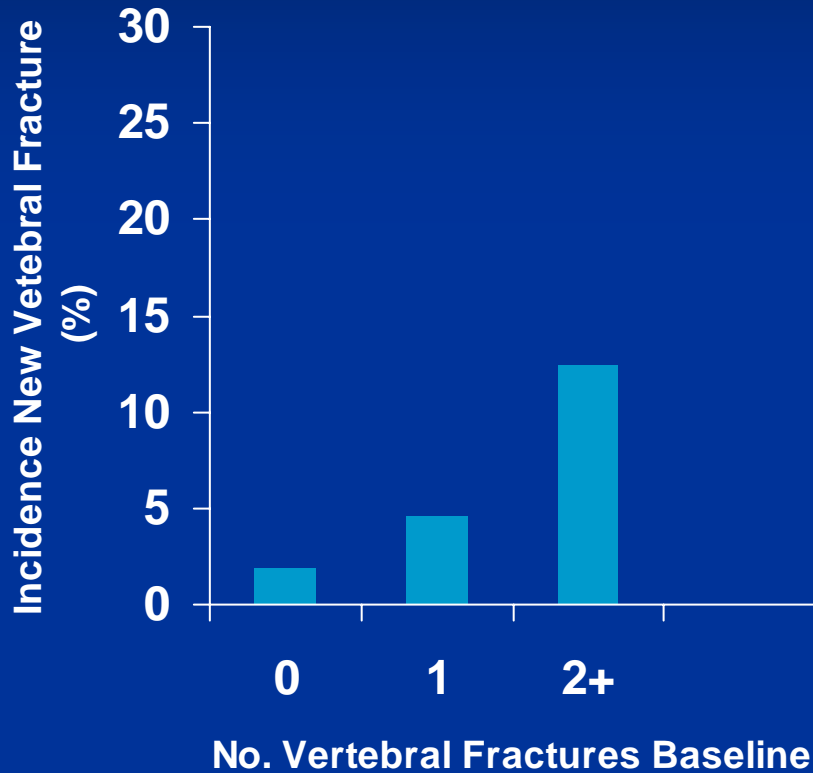
Baseline BMD



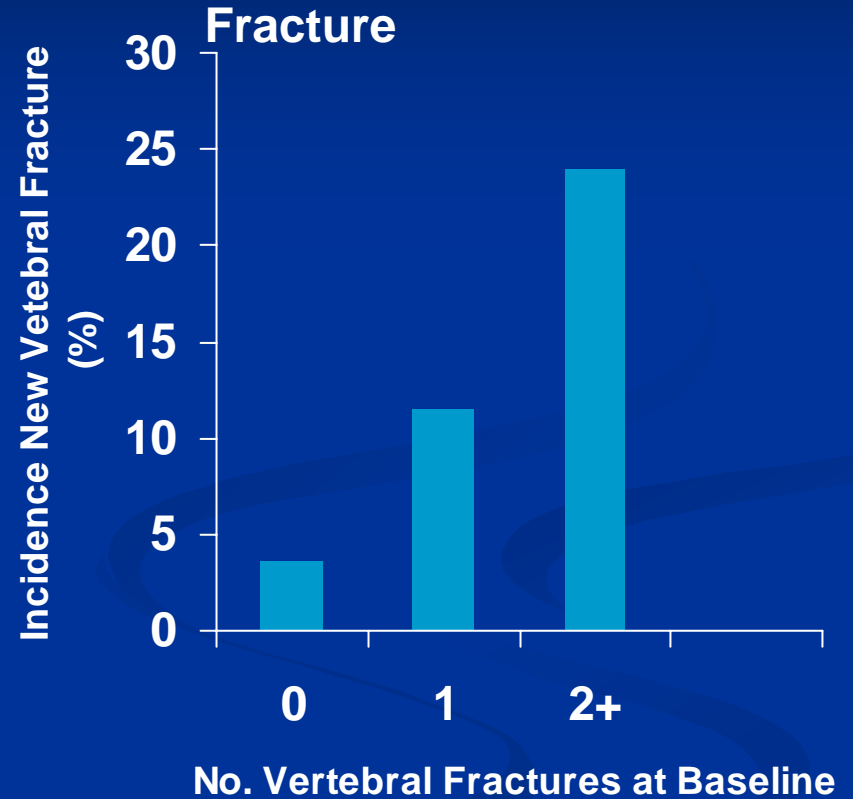
Change in BMD Over Time – Spine (A) Hip (B)

Vertebral Fracture and Subsequent Risk

First Year of Study



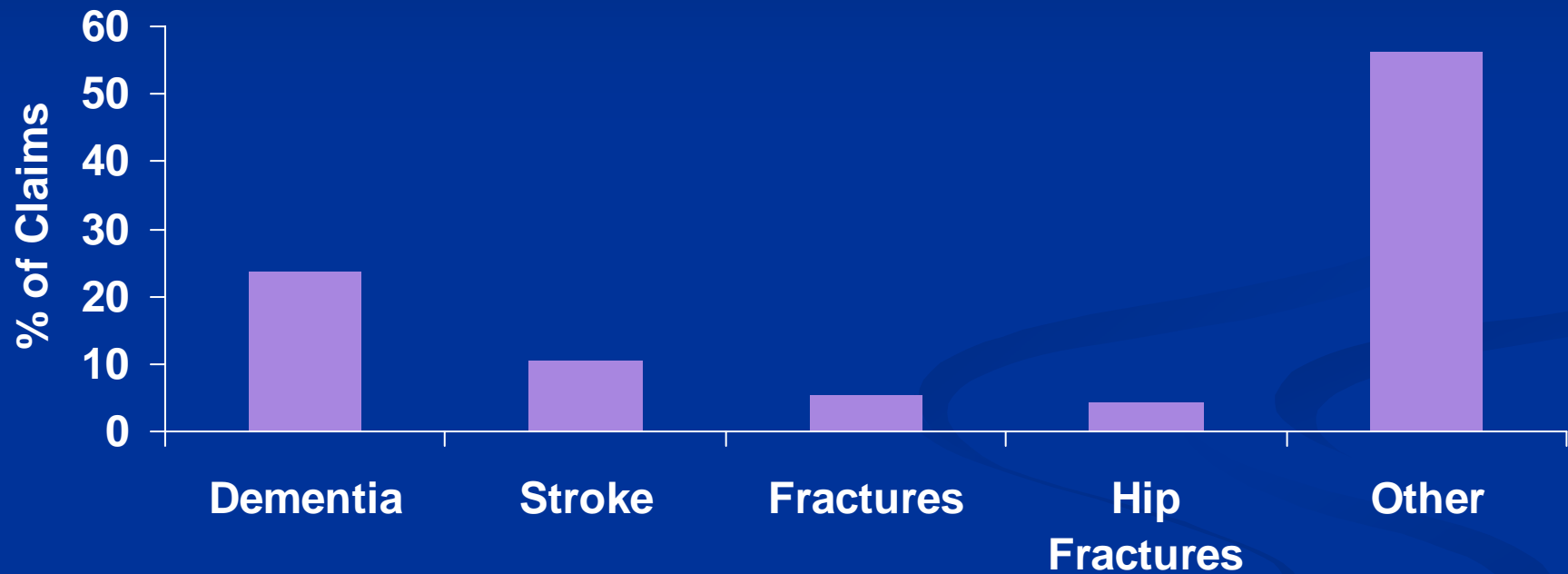
First Year After Vertebral Fracture



Claims Experience

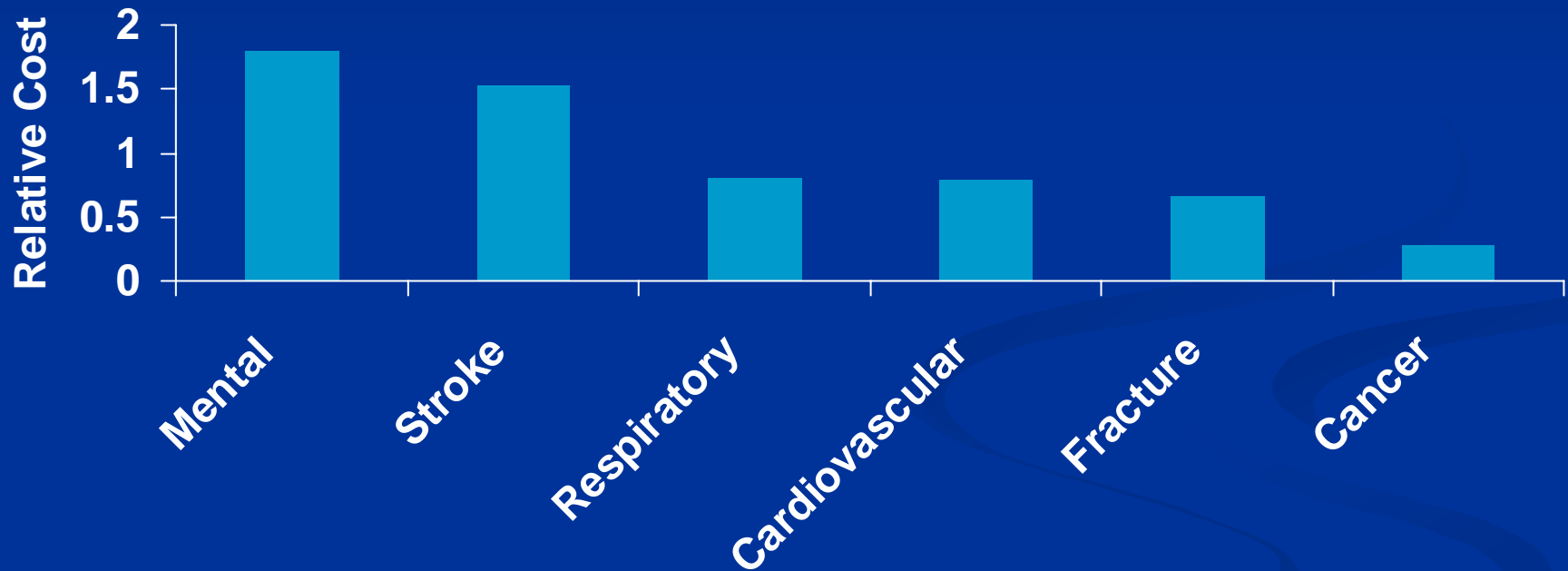
Claims Experience

Claims Distribution



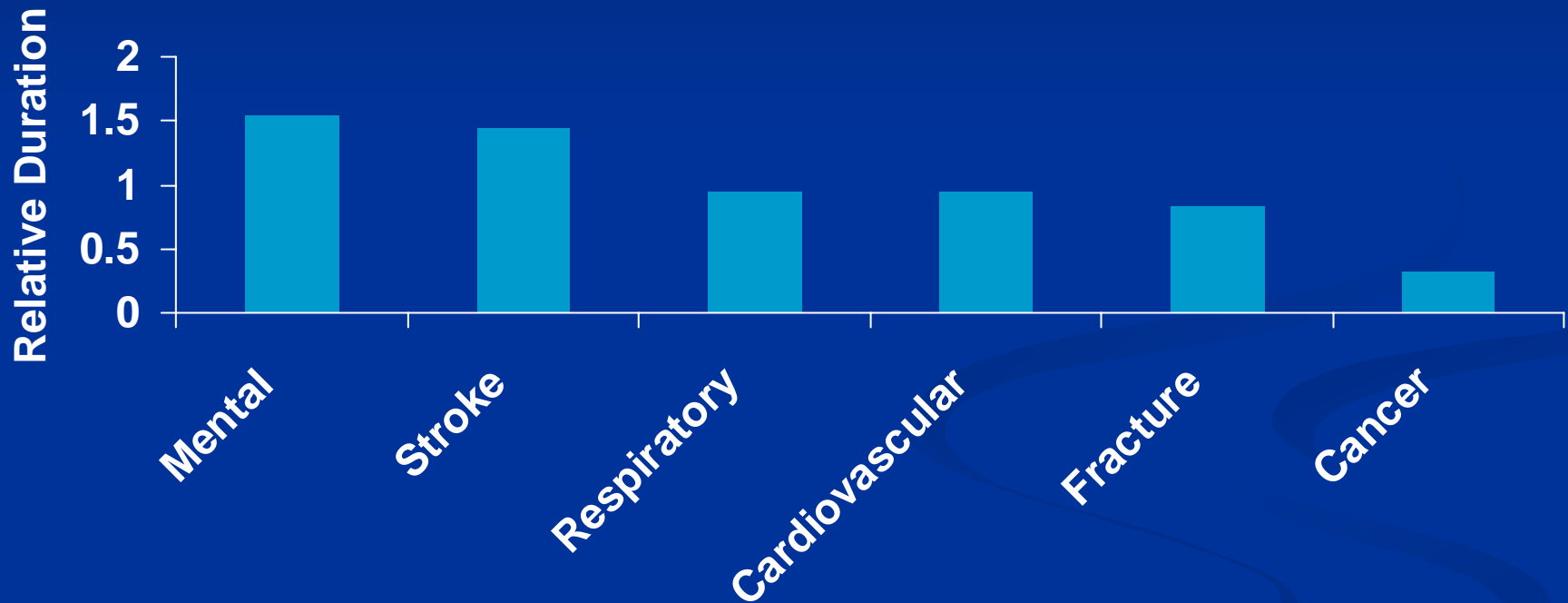
Claims Experience

Relative Claims Cost



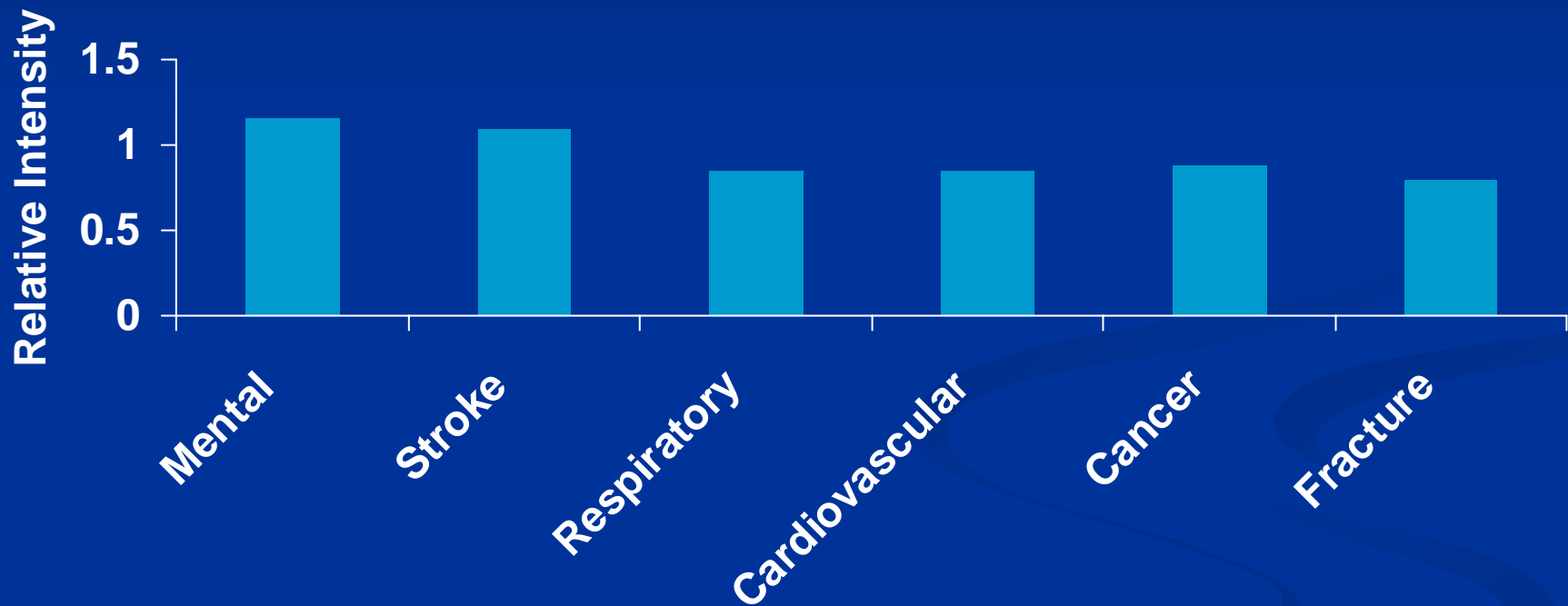
Claims Experience

Relative Claims Duration



Claims Experience

Relative Claims Intensity (Cost/Days)



Osteoporosis–Underwriting

Considerations

Risk Assessment

- BMD
- Osteoporosis treatment
- Falls
- Fractures
- Symptoms
- Significant loss of height
- Kyphoscoliosis
- Pain medication use
- Functional limitations

Co-Morbidity Consideration

- Build/BMI
- Smoking
- ETOH use
- Steroid use
- Polypharmacy
- Visual disturbance
- Neuromuscular disorders
- Vertigo/Dizziness/Imbalance

