
OSTEOPOROSIS

ACOI BOARD REVIEW 2017

Howard Feinberg, D.O., F.A.C.O.I., F.A.C.R.

EPIDEMIOLOGY OF OSTEOPOROSIS IN THE UNITED STATES

- ▶ 44 Million Americans
 - 80% women (35.2 million)
 - 20% men (14.8 million)
- ▶ 1.5 million fractures/year
- ▶ 10 million with established Osteoporosis
- ▶ 34 million with low bone mass
- ▶ Lifetime risk
 - Men 30%
 - Women 40%

OSTEOPOROTIC FRACTURES IN THE UNITED STATES

- ▶ Hip 300,000
- ▶ Spine 700,000
- ▶ Wrist 250,000
- ▶ Other 350,000

FREQUENCY OF COMMON DISEASES IN THE UNITED STATES

- ▶ Osteoporotic Fractures > 1,500,000
- ▶ Myocardial Infarction 513,000
- ▶ Stroke 228,000
- ▶ Breast Cancer 182,000
- ▶ Uterine Cancer 49,000

RISK FACTORS FOR OSTEOPOROSIS

▶ Nonmodifiable

- Age
- Female sex
- Asian/Caucasian
- Prior fracture
- Family history
- Small frame
- Thyroid disease

▶ Modifiable

- Low body weight
- Calcium deficient
- Vitamin D deficient
- Inadequate physical activity
- Excessive alcohol
- Tobacco use
- Long term steroid use
- Estrogen/testosterone deficiency

RISK OF REFRACTURE

- ▶ 86% Increased fracture risk
- ▶ 1 Year risk 26.1%
 - 17.4% New vertebral fracture
 - 1.6% New wrist fracture
 - 7.1% New hip, pelvic, leg fracture

CLINICAL PRESENTATION

- ▶ Asymptomatic
- ▶ Low trauma fracture
- ▶ Loss of height
- ▶ Increased thoracic kyphosis
- ▶ Back pain

VERTEBRAL FRACTURE

- ▶ Loss of height
- ▶ Loss of Mobility
- ▶ Loss of function
- ▶ Acute pain
- ▶ Chronic pain
- ▶ Decreased functional vital capacity
- ▶ Decreased life expectancy

HIP FRACTURE

- ▶ A 50 year old woman has a 2.8% lifetime risk of death from hip fracture
 - Equal to breast cancer
 - 4x higher than endometrial cancer
- ▶ 20% Die within 1 year
- ▶ 75% of survivors require assistance with ADL's
 - 40% unable to walk without assistance at 1 year
 - 60% require some assistance 4 years later
- ▶ 20% require long term nursing home care

DEXA

▶ MEDICARE INDICATIONS FOR DEXA

- Estrogen deficiency
- Vertebral abnormality
- Hyperparathyroidism
- Long term steroid use
- Assessment of therapy
- Screening

▶ NOF Guidelines For DEXA

- All women over age 65
- Younger postmenopausal women with one or more risk factors
- Post menopausal women with fractures

DEXA REPORT

ASHLAND ARTHRITIS CENTER

DR. HOWARD L. FEINBERG
1901 WINCHESTER AVE. SUITE 103
ASHLAND, KY 41101

Phone: 606-329-8712
Fax: 606-329-0924

Patient Name: ██████████ Current Height: 5'4"
Social Security No: ██████████ Current Weight: 205 lbs
Patient ID: ██████████
Postal Code: ██████████ DOB: 11/13/27
Sex: F Menopause Age: ██████████
Ethnicity: C Age: 76

Referring Physician: FEINBERG

DXA Scan Information:

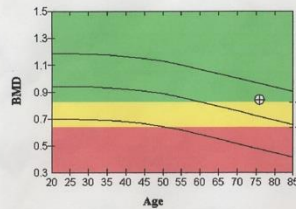
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Scan Mode: Fast Performance
Analysis: 8/10/04 13:23 - Ver 8.26
Operator: JW
Model: Hologic QDR-4000 (S/N 55457)
Comment:



Image not for diagnostic use
Total BMD CV 1.0%

Results Summary:

Total[L] BMD:	0.841 g/cm ²							
Peak reference:	89%		T score:	-0.8				
Age matched:	118%		Z score:	1.0				
Region	Area [cm ²]	BMC [g]	BMD [g/cm ²]	T score	%PR	Z score	%AM	
Neck:	5.90	3.65	0.618	-2.1	73%	0.1	101%	
Troch:	10.89	6.23	0.572	-1.3	81%	0.3	106%	
Inter:	19.72	20.82	1.055	-0.3	96%	1.4	125%	
Total	36.52	30.70	0.841	-0.8	89%	1.0	118%	
Ward's:	1.10	0.37	0.337	-3.4	46%	-0.5	85%	



Reference Curve: NHA 1 February 97
Age and Sex Matched

Fracture Risk
■ Not Increased
■ Increased
■ High

* WHO 1994

WHO Classification*
 Normal
 Osteopenia
 Osteoporosis

HOLOGIC
V2.0 8/10/04

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Ethnicity: C Age: 76

Referring Physician: FEINBERG

DXA Scan Information:

Scan: 8/10/04 - A08100404
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Analysis: 8/10/04 13:30 - Ver 8.26
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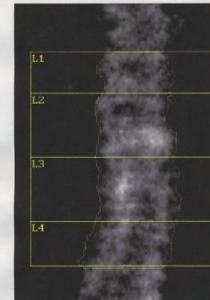
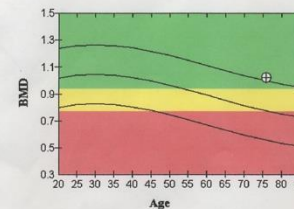


Image not for diagnostic use
Total BMD CV 1.0%

Results Summary:

Total BMD:	1.023 g/cm ²							
Peak reference:	98%		T score:	-0.2				
Age matched:	132%		Z score:	2.3				
Region	Area [cm ²]	BMC [g]	BMD [g/cm ²]	T score	%PR	Z score	%AM	
L1	10.50	7.92	0.755	-1.5	82%	0.7	111%	
L2	17.85	19.63	1.100	0.7	107%	3.1	145%	
L3	19.26	21.44	1.113	0.3	103%	2.9	139%	
L4	15.39	15.45	1.004	-1.0	90%	1.7	122%	
Total:	63.00	64.45	1.023	-0.2	98%	2.3	132%	



Reference Curve: TK 4 November 91
Age and Sex Matched

Fracture Risk
■ Not Increased
■ Increased
■ High

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HOLOGIC
V2.0 8/10/04

WHO Bone Density Criteria for Diagnosing Osteoporosis

Diagnosis	BMD T-Score: Number of SD Below Mean in Healthy Young Women*
Normal	-1 or above
Low bone mass [osteopenia]	Between -1 and -2.5
Osteoporosis	-2.5 or less
Severe osteoporosis	-2.5 or less with fragility fractures

- ▶ Reduction by 1 SD equals a 10% to 12% decrease in BMD
 - 1 SD change increases fracture risk by 1.5- to 2.0-fold

TREATMENT GUIDELINES

▶ Normal BMD

- Appropriate calcium and vit D
- Weight bearing exercise
- Risk factor review
- Periodic monitoring

▶ Osteopenia

- FRAX Analysis using 10 year fracture probability
- Nation specific
- Race specific
- Includes men over the age of 50

NOF TREATMENT GUIDELINES

- ▶ Postmenopausal women or men over 50 with a hip or spinal fracture
- ▶ T score of -2.5 or lower in the hip or spine
- ▶ T score lower than -1.0 with a FRAX analysis
 - 10 year probability of hip fracture > 3%
 - 10 year probability of other osteoporotic fracture > 20%

OSTEOPOROSIS TREATMENT

▶ Prevention

▶ Nutrition

— Calcium

— Vitamin D

▶ Exercise

▶ Fall prevention

▶ Pain control

▶ Surgery

CALCIUM

- ▶ Accounts for 2% of an adults weight
- ▶ 1984 NIH consensus 1500mg/day recommended
- ▶ RDA 1000mg/day
- ▶ Current recommendations
 - Post menopausal women 600mg bid
 - Men RDA
 - under age 71 1000mg
 - Over age 71 1200mg

OSTEOPOROSIS TREATMENT

▶ Estrogen

▶ Evista

▶ Calcitonin

▶ Forteo

▶ Prolia

▶ Actonel

▶ Fosomax

▶ Boniva

▶ Reclast

ESTROGEN

- ▶ Decreases bone resorption
 - Decreases osteoclastogenic cytokine production in T-cells and osteoblasts
 - Increases apoptosis of osteoblasts
- ▶ Used alone only after hysterectomy
- ▶ Used with progesterone if no hysterectomy

CALCITONIN

- ▶ SQ or Nasal spray
- ▶ Well tolerated
- ▶ No drug interactions
- ▶ Good long term safety
- ▶ Nasal irritation
- ▶ Rash
- ▶ G.I.
- ▶ No hip data
- ▶ Poor long term data

BISPHOSPHONATES

- ▶ Decrease bone turnover
- ▶ Increased BMD spine, hip, other
- ▶ Decreased fracture risk spine, hip, other
- ▶ Sustained effect with continued treatment

PROLIA (DENOSUMAB)

- ▶ Human IgG2 monoclonal antibody
- ▶ Affinity for RANKL
- ▶ 6 month SQ injection
- ▶ Hip fracture 0.7 vs 1.2% (3 years)
- ▶ Spinal fracture 2.3 vs 7.2% (3 years)
- ▶ Indications
 - 1) High risk
 - 2) Bisphosphonate failures

FORTEO (TERIPARATIDE)

- ▶ Recombinant human parathyroid hormone
- ▶ Treatment duration 2 years
- ▶ Indications: 1) High risk
2) Treatment failures
- ▶ Osteosarcoma
- ▶ Hypercalcemia. Hypercalcuria
- ▶ Hyperuricemia
- ▶ Orthostatic hypotension

CONTACT INFORMATION

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