EMERGING TRENDS IN POSTMENOPAUSAL OSTEOPOROSIS

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OSTEOPOROSIS AND BONE HEALTH SERVICES
CINCINNATI, OHIO
DISCLOSURES

• Stock options/holdings, royalties, company owner, patent owner, official role: OsteoDynamics co-founder, shareholder, director

• I have received honoraria for lectures from the following companies in the past year: Amgen, Merck, Novartis, Warner Chilcott

• I have received consulting fees from the following companies in the past year: AbbVie, Amarin, Amgen, Bristol-Meyers Squibb, Corcept, Endo, Imagepace, Janssen, Lilly, Merck, Noven, Novo Nordisk, Pfizer/Wyeth, Quark, Radius, sanofi-aventis

• Through my employer, I have research support from the following companies: Merck, NPS
EMERGING TRENDS IN POSTMENOPAUSAL OSTEOPOROSIS

- What is osteoporosis?
- Why you should care
- Whom to test and how
- Whom to treat and how
DEFINITION OF OSTEOPOOROSIS

• A skeletal disorder characterized by
  – compromised bone strength
  – predisposing to
  – an increased risk of fracture.

• Bone strength reflects the integration of two main features:
  – bone density and
  – bone quality.

2000 NIH Consensus Development Conference
OSTEOPOROSIS IS A SERIOUS PUBLIC HEALTH PROBLEM

- At age 50, lifetime risk of fracture is
  - 1:2 women
  - 1:5 men
- Affects 10 million Americans
  - 8 million women
  - 2 million men
- 2 million fractures yearly*
- Direct cost $17 billion*

*Based on figures from 2005. Cost does not include lost productivity, unpaid caregiver time, transportation and social services

NOF Fast Facts, www.nof.org
CENTRAL DXA
DUAL-ENERGY X-RAY ABSORPTIOMETRY

Ge Lunar

Hologic

Norland
WHO SHOULD HAVE A BONE DENSITY TEST?

- Women age 65 and older and men age 70 and older
- Younger postmenopausal women and men age 50-69 about whom you have concern based on their clinical risk factor profile
- Adults who have a fracture after age 50
- Adults with a condition (e.g., rheumatoid arthritis) or taking a medication (e.g., glucocorticoids…) associated with low bone mass or bone loss

National Osteoporosis Foundation
Clinician’s Guide to Prevention and Treatment of Osteoporosis
www.nof.org
WHY AGE 65?

Number Needed to Screen

- Fracture Type
  - Hip
  - Vertebra

Number Needed to Treat

- Fracture Type
  - Hip
  - Vertebra

Effective July 1, 1998, Medicare covers bone densitometry for five indications:

- Estrogen deficient women at clinical risk for osteoporosis
- Patients with vertebral abnormalities
- Patients receiving long-term glucocorticoids (prednisone 5 mg/d or more for 3+ months)
- Patients with primary hyperparathyroidism
- Patients being monitored to assess the response to an approved drug
WHO CRITERIA FOR POSTMENOPAUSAL OSTEOPOROSIS

The T-score compares an individual’s BMD with the mean value for young normal individuals and expresses the difference as a standard deviation score.

<table>
<thead>
<tr>
<th>Category</th>
<th>T-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>-1.0 and above</td>
</tr>
<tr>
<td>Low bone mass (osteopenia)</td>
<td>Between -1.0 to -2.5</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>-2.5 and below</td>
</tr>
</tbody>
</table>

DATA FROM NORA
National Osteoporosis Risk Assessment

Adapted from Siris E et al. Arch Intern Med. 2004;164:1108
Use FRAX® to estimate 10-year fx risk. Treat if risk is
≥3% for hip fracture or
≥20% for major osteoporotic fractures.
Welcome to FRAX®

The FRAX® tool has been developed by the WHO to assess the fracture risk of patients. It is based on individual patient models that integrate BMD measurement with clinical risk factors, as well as bone mineral density (BMD) at the femoral neck.

The FRAX® models have been developed from studying population-based cohorts from Europe, North America, Asia and Australia. In their most sophisticated form, the FRAX® tool is computer-driven and is available on this site. Several simplified paper versions, based on the number of risk factors are also available, and can be downloaded for office use.

The FRAX® algorithms give the 10-year probability of fracture. The output is a 10-year probability of hip fracture and the 10-year probability of a major osteoporotic fracture (clinical spine, forearm, hip or shoulder fracture).
Welcome to FRAX®

The FRAX® tool has been developed to assess the 10-year probability of fracture for individual patient models that integrate age, body mass index (BMI), and biochemical markers with bone mineral density (BMD) at the femoral neck.

The FRAX® models have been developed using population-based cohorts from Europe, North America, Asia and Oceania. In their most sophisticated form, the FRAX® tool is computer-driven and is available on this site. Several simplified paper versions, based on the number of risk factors are also available, and can be downloaded for office use.

The FRAX® algorithms give the 10-year probability of fracture. The output is a 10-year probability of hip fracture and the 10-year probability of a major osteoporotic fracture (clinical spine, forearm, hip or shoulder fracture).

Dr. John A. Kanis
Professor Emeritus,
University of Sheffield
Welcome to FRAX®

The FRAX® tool has been developed to estimate the 10-year probability of major osteoporotic fracture and hip fracture in individuals. It is based on biostatistical models that incorporate patient risk factors and local population risk factor distributions. The tool allows for calculation of fracture risk for different populations, such as Canada, Europe, North America, Asia, and Oceania. The FRAX® models are based on large population-based cohorts from Europe, North America, Asia, and Australia. In their most sophisticated form, the FRAX® tool is computer-driven and is available on this site. Several simplified paper versions, based on the number of risk factors, are also available and can be downloaded for office use.

The FRAX® algorithms give the 10-year probability of fracture. The output is a 10-year probability of hip fracture and the 10-year probability of a major osteoporotic fracture (clinical spine, forearm, hip, or shoulder fracture).

Dr. John A. Kanis
Professor Emeritus, University of Sheffield

Web Version 3.4

View Release Notes

Links

www.iofbonehealth.org

www.nof.org

www.jpof.or.jp

www.esceo.org

FRAX available as iPhone App

View in iTunes
Please answer the questions below to calculate the ten year probability of fracture with BMD.

**Questionnaire:**

1. Age (between 40-90 years) or Date of birth
   - Age: 63
   - Date of birth: Y: M: D:
2. Sex
   - Female
3. Weight (kg)
   - 59.37
4. Height (cm)
   - 160.02
5. Previous fracture
   - No
6. Parent fractured hip
   - No
7. Current smoking
   - No
8. Glucocorticoids
   - No
9. Rheumatoid arthritis
   - No
10. Secondary osteoporosis
    - No
11. Alcohol 3 or more units per day
    - No
12. Femoral neck BMD (g/cm²)
    - Hologic: 0.580
    - T-score: -2.3

**Weight Conversion**
- From Pounds to Kgs: 132
- Convert: Convert

**Height Conversion**
- From Inches to Cms: 63
- Convert: Convert
Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

**Questionnaire:**

1. Age (between 40-90 years) or Date of birth
   - Age: 63
   - Date of birth: Y: -, M: -, D: -

2. Sex
   - Male
   - Female

3. Weight (kg)
   - 59.87

4. Height (cm)
   - 160.02

5. Previous fracture
   - No
   - Yes

6. Parent fractured hip
   - No
   - Yes

7. Current smoking
   - No
   - Yes

8. Glucocorticoids
   - No
   - Yes

9. Rheumatoid arthritis
   - No
   - Yes

10. Secondary osteoporosis
    - No
    - Yes

11. Alcohol 3 or more units per day
    - No
    - Yes

12. Femoral neck BMD (g/cm²)
    - Hologic
    - T-score: -2.3

**BMI:** 23.4

**The ten year probability of fracture (%):**

- Major osteoporotic: 11
- Hip fracture: 2.0
Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

**Country:** US (Caucasian)  
**Name/ID:** Susie Smith

**Questionnaire:**

1. Age (between 40-90 years) or Date of birth:
   - Age: 63  
   - Date of birth: Y: __ M: __ D: __

2. Sex:
   - Male  
   - Female

3. Weight (kg):
   - 59.07

4. Height (cm):
   - 160.02

5. Previous fracture:
   - No  
   - Yes

6. Parent fractured hip:
   - No  
   - Yes

7. Current smoking:
   - No  
   - Yes

8. Glucocorticoids:
   - No  
   - Yes

9. Rheumatoid arthritis:
   - No  
   - Yes

10. Secondary osteoporosis:
    - No  
    - Yes

11. Alcohol 3 or more units per day:
    - No  
    - Yes

12. Femoral neck BMD (g/cm²):
    - **T-score:** -2.3
      - Hologic: 0.580

The ten year probability of fracture (%)

- Major osteoporotic: 20
- Hip fracture: 2.1

**BMI:** 23.4

**Weight Conversion**

- Pounds: 132
- Kgs

**Height Conversion**

- Inches: 63
- Cms
Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

Country: US (Caucasian)  Name/ID: Susie Smith

**Questionnaire:**

1. Age (between 40-80 years) or Date of birth
   - Age: 63
   - Date of birth: [Y] [M] [D] [D]:

2. Sex
   - Male
   - Female

3. Weight (kg): 59.37

4. Height (cm): 160.02

5. Previous fracture
   - No
   - Yes

6. Parent fractured hip
   - No
   - Yes

7. Current smoking
   - No
   - Yes

8. Glucocorticoids
   - No
   - Yes

9. Rheumatoid arthritis
   - No
   - Yes

10. Secondary osteoporosis
    - No
    - Yes

11. Alcohol 3 or more units per day
    - No
    - Yes

12. Femoral neck BMD (g/cm²)
    - Hologic: 0.580
    - T-score: -2.0

**BMI** 23.4

The ten year probability of fracture (%) with BMD:

- Major osteoporotic: 18
- Hip fracture: 3.5

**Weight Conversion**

- Pounds
  - 132
  - Convert

**Height Conversion**

- Inches
  - 63
  - Convert
Please answer the questions below to calculate the ten year probability of fracture with BMD.

**Questionnaire:**

1. Age (between 40-90 years) or Date of birth
   - Age: 63
   - Date of birth: Y: M: D: 

2. Sex
   - Male

3. Weight (kg)
   - 60.87

4. Height (cm)
   - 160.02

5. Previous fracture
   - No

6. Parent fractured hip
   - No

7. Current smoking
   - No

8. Glucocorticoids
   - Yes

9. Rheumatoid arthritis
   - No

10. Secondary osteoporosis
    - Yes

11. Alcohol 3 or more units per day
    - Yes

12. Femoral neck BMD (g/cm²)
    - Hologic: 0.580
    - T-score: -2.3

**BMI:** 23.4

**The ten year probability of fracture (%):**

- Major osteoporotic: 17
- Hip fracture: 3.7

**Weight Conversion**
- Pounds → Kgs
  - 132
- Convert

**Height Conversion**
- Inches → Cms
  - 63
- Convert
Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

**Questionnaire:**

1. Age (between 40-90 years) or Date of birth
   - Age: 68
   - Date of birth: 

2. Sex
   - Male

3. Weight (kg)
   - 59.87

4. Height (cm)
   - 160.02

5. Previous fracture
   - No

6. Parent fractured hip
   - No

7. Current smoking
   - No

8. Glucocorticoids
   - No

9. Rheumatoid arthritis
   - No

10. Secondary osteoporosis
    - No

11. Alcohol 3 or more units per day
    - No

12. Femoral neck BMD (g/cm²)
    - 0.564
      - **T-score: -2.4**

---

**BMI 23.4**

**The ten year probability of fracture (%)**

- Major osteoporotic: 13
- Hip fracture: 3.0

---

**Weight Conversion**

- 132 Pounds
- Convert

**Height Conversion**

- 63 Inches
- Convert
LIMITATIONS OF FRAX™
WHO FRACTURE PROBABILITY TOOL

• Not valid in patients on treatment
• Only hip BMD is considered
• Risk is “yes/no” – there is no consideration of “dose” (e.g., fractures, corticosteroids, smoking, alcohol)
• Not all risk factors are included
• Clinical judgment is required

Watts NB et al.  J Bone Miner Res 2009;24:975-979
TREATMENT GOALS FOR PATIENTS WITH OSTEOPOROSIS

REDUCE THE RISK OF FUTURE FRACTURE
• Improve bone strength
• Prevent falls and injuries

DEAL WITH COMPLICATIONS
• Fracture care
• Acute and chronic pain
• Change in body habitus, self esteem
• Deconditioning, dependence, depression
FUNDAMENTAL MEASURES FOR BONE HEALTH

- CALCIUM
- VITAMIN D
- EXERCISE
OPTIMAL CALCIUM INTAKE

1200 mg daily for adults age 50 and older
TOTAL FROM ALL SOURCES

Average calcium from diet:
Women 50 and older: ~500 mg daily
Men 50 and older: ~600 mg daily

Most people need a calcium supplement of 700 to 1000 mg daily.
Many people are taking too much.
MOST OF US WILL BENEFIT FROM A VITAMIN D SUPPLEMENT

- Vitamin D has important skeletal and extra-skeletal effects
- Adequate 25-hydroxyvitamin D level is ≥30 ng/mL
  - Desirable range 30-60 ng/mL
  - Toxicity unlikely with levels up to 100 ng/mL
- Vitamin D deficiency is common
- Most patients require 1,000-2,000 IU vitamin D per day to achieve this level
- A variety of supplements are available (1,000 IU, 2,000 IU, 50,000 IU)
- “Safe upper limit” is 4,000 IU per day
## FDA-APPROVED MEDICATIONS
### INDICATIONS

<table>
<thead>
<tr>
<th>Drug</th>
<th>Postmenopausal Osteoporosis</th>
<th>Glucocorticoid-induced Osteoporosis</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risedronate (Atelvia®)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denosumab (Prolia™)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoledronate (Reclast®)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Teriparatide (Forteo®)</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Alendronate (Fosamax®)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Raloxifene (Evista®)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ibandronate (Boniva®)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Calcitonin (Miacalcin®, Fortical®)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risedronate (Actonel®)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risedronate (Atelvia®)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Men: prevention and treatment options for osteoporosis.**
TREATMENT OF OSTEOPOROSIS

Antiresorptive Agents
- Calcitonin
- Raloxifene
- Alendronate
- Risedronate
- Ibandronate
- Zoledronate
- Denosumab

Anabolic Agents
- Teriparatide
### FDA-APPROVED MEDICATIONS

#### EVIDENCE FOR FRACTURE REDUCTION

<table>
<thead>
<tr>
<th>Drug</th>
<th>Vertebra Fracture</th>
<th>Nonvertebra Fracture</th>
<th>Hip Fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcitonin (Miacalmin®, Fortical®)</td>
<td>✅</td>
<td>No effect demonstrated</td>
<td>No effect demonstrated</td>
</tr>
<tr>
<td>Raloxifene (Evista®)</td>
<td>✅</td>
<td>No effect demonstrated</td>
<td>No effect demonstrated</td>
</tr>
<tr>
<td>Ibandronate (Boniva®)</td>
<td>✅</td>
<td>No effect demonstrated</td>
<td>No effect demonstrated</td>
</tr>
<tr>
<td>Alendronate (Fosamax®)</td>
<td>✅</td>
<td>★</td>
<td>✅</td>
</tr>
<tr>
<td>Risedronate (Actonel®, Atelvia®)</td>
<td>✅</td>
<td>✅</td>
<td>★</td>
</tr>
<tr>
<td>Zoledronic acid (Reclast®)</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Denosumab (Prolia™)</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Teriparatide (Forteo®)</td>
<td>✅</td>
<td>✅</td>
<td>No effect demonstrated</td>
</tr>
</tbody>
</table>

*Evidence for effect but not an FDA-approved indication*
### BISPHOSPHONATES AVAILABLE IN THE US

<table>
<thead>
<tr>
<th></th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alendronate</strong></td>
<td>5 &amp; 10 mg</td>
<td>35 &amp; 70 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fosamax®)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Risedronate</strong></td>
<td>5 mg</td>
<td>35 mg†</td>
<td>150 mg</td>
<td></td>
</tr>
<tr>
<td>(Actonel®, Atelvia®)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ibandronate</strong></td>
<td>2.5 mg</td>
<td></td>
<td>150 mg</td>
<td>3 mg q 3 mo</td>
</tr>
<tr>
<td>(Boniva®)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zoledronate</strong></td>
<td></td>
<td></td>
<td></td>
<td>5 mg/yr</td>
</tr>
<tr>
<td>(Reclast®)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Alendronate available as alendronate alone (brand or generic) or with 70 mg with vitamin D 2800 or 5600 IU (brand only)
†Atelvia should be taken once weekly, immediately after breakfast
BISPHOSPHONATES
SIDE EFFECTS / SAFETY CONCERNS

- May cause esophageal irritation (oral)
- Can cause acute phase response (IV and high-dose oral)
- Contraindicated in patients with hypocalcemia
- Limited to patients with good kidney function (GFR >30 or 35 mL/min)
- Musculoskeletal pain?
- Osteonecrosis of the jaw?
- Atypical femur fractures?
SUBTROCHANTERIC FRACTURES OF THE FEMUR

Watts NB and Diab D, *J Clin Endocrinol Metab* 2010;95:1555-1565
Major Features

• Distal to the lesser trochanter to proximal to the supracondylar flare
• Minimal or no trauma
• Transverse or oblique
• Noncomminuted
• Complete fractures extend through both cortices and may have a medial spike; incomplete fractures involve only the lateral cortex

Shane E et al, JBMR 2010;25:2267-2294
FEMORAL STRESS FRACTURES

Atypical fractures accounted for 0.46% of all femur fractures and 4.4% of all shaft fractures.

Only 11% were using bisphosphonates! Assume 35% risk reduction – 4,000 fractures could have been prevented.

10.6% of all femur fractures were in the shaft.

Absolute risk increase: 5 cases per 10,000 pt years

“SIDE BENEFITS” OF BISPHOSPHONATE THERAPY

- Decreased risk of breast cancer\textsuperscript{1-5}
- Decreased risk of colorectal cancer\textsuperscript{6}
- Decreased risk of stroke\textsuperscript{7}
- Reduced risk of gastric cancer\textsuperscript{8}
- Decreased overall mortality\textsuperscript{9,10}

LONG-TERM EXPERIENCE WITH ALENDRONATE FIT LONG-TERM EXTENSION (FLEX) STUDY

- Patients who received ~5 years of alendronate in the Fracture Intervention Trial
- Second 5-year period, re-randomized to stay on alendronate (n=672) or change to placebo (n=437)
- 10 yrs of treatment compared with stopping after 5 yrs

Black DM et al, JAMA 2006;296:2927-2938
Schwartz AV et al. J Bone Miner Res 2010;25:976-982
LONG-TERM EXPERIENCE WITH ALENDRONATE
FIT LONG-TERM EXTENSION (FLEX) STUDY

- Patients who received ~5 years of alendronate in the Fracture Intervention Trial signed up for a second 5-study
- Re-randomized to stay on alendronate (n=672) or change to placebo (n=437)
- For those who had 10 yrs of alendronate compared with stopping after 5 yrs
  - Overall, clinical vertebral fractures were reduced by 55%
  - In women with T-scores -2.5 or below at the start of FLEX, nonvertebral fractures were reduced by 50%

Black DM et al, *JAMA* 2006;296:2927-2938
Schwartz AV et al. *J Bone Miner Res* 2010;25:976-982
CLINICAL VERTEBRAL FRACTURES IN THE FLEX STUDY

Cumulative incidence of fractures (%)

Years Since FIT

ALN/PLB  437  436  425  412  398  387
ALN/ALN  662  660  646  631  615  597

ALN 5 years → Placebo 5 years
Alendronate 10 years

RR ↓ 55%
P=0.013

2.5%

Black DM et al, JAMA 2006;296:2927-2938
HORIZON PFT EXTENSION

- Extension of 3-year placebo-controlled double-blind trial
- Patients who had 3 years of ZOL in PFT were randomized to continue ZOL or change to placebo
- Morphometric vertebral fractures were reduced by 49% for those who received 6 years of treatment compared with those who stopped after 3 years

Thus, the available data on long-term efficacy do not clearly identify subgroups of patients who are more likely to benefit from drug therapy beyond 3 to 5 years...

...decisions to continue treatment must be based on individual assessment of risks and benefits and on patient preference. In this regard, patients at low risk for fracture (e.g., younger patients without a fracture history and with a bone mineral density approaching normal) may prove to be good candidates for discontinuation of bisphosphonate therapy after 3 to 5 years, whereas patients at increased risk for fracture (e.g., older patients with a history of fracture and a bone mineral density remaining in the osteoporotic range) may benefit further from continued bisphosphonate therapy.
In FLEX, number needed to treat (NNT) for 5 years to prevent one clinical vertebral fracture
- Women with vertebral fx and T-score -2.0 or below 17
- Women without vertebral fx and T-score -2.5 or below 24
HOW LONG TO TREAT WITH BISPHOSPHONATES?

• Long-term treatment (e.g., 5-10 years) appears to be safe for most patients

• For lower risk patients, after 3-5 years of treatment, “drug holidays” can probably be taken without a major sacrifice of efficacy

• Higher risk patients should probably continue treatment for 10 years, then consider a “holiday” of 1-2 years

Watts NB and Diab D, J Clin Endocrinol Metab 2010;95:1555-1565
DENOSUMAB

- Human monoclonal antibody to RANKL; decreases osteoclast differentiation, function and survival
- Reduces risk of spine, hip and nonvertebral fractures
- For treatment of osteoporosis, 60 mg SQ every 6 months
- Does not require dose adjustment for decreased kidney function
- Effect is reversible within 6-12 months of stopping

Prolia PI
Cummings SR et al, J Bone Miner Res 2008;23:S80
SELECTING AMONG ANTIRESORPTIVE AGENTS

- Efficacy – “broad spectrum” antifracture efficacy (alendronate, risedronate, zoledronate, denosumab)
- Route of administration – oral (fasting or with food) or parenteral
- Frequency of administration – daily, weekly, monthly, quarterly, twice yearly, once yearly
- Side effects/tolerability – depends on agent and patient
- Non-skeletal effects – breast cancer reduction (raloxifene)
- Cost/insurance coverage – generic oral; drugs “administered by health professional” covered by Medicare Part B
PTH 1,34 (TERIPARATIDE)
HOW CAN A HORMONE THAT’S BAD FOR BONE BE GOOD FOR BONE?

Dobnig H and Turner RT, *Endocrinology* 1997;138:4607-4612
WHAT IS THE ROLE FOR TERIPARATIDE?

- Mechanism of action different from other agents (antiresorptive vs anabolic)
- Reserved for patients with severe osteoporosis or those failing treatment with bisphosphonates
- Treatment limited to 2 years; follow with an anti-resorptive agent

Watts NB, personal opinion
Forteo Package Insert
MONITORING PATIENTS ON TREATMENT FOR OSTEOPOROSIS

- Monitor with DXA every 1-2 years
  - Do not "over-interpret" change
  - Be happy when BMD is stable OR increasing
- Patients who lose on treatment may not be taking their drugs or not absorbing the drug or may have underlying disorders that need to be addressed
- Patients on treatment whose BMD remains low are at high risk of fracture and may benefit from longer treatment
COMPONENTS OF FRACTURE RISK

SKELETAL RISK FACTORS
- Low BMD
- Previous fracture
- High bone turnover
- Family history of osteoporosis
- Calcium
- Bone-active agents
- Vitamin D
- Age

NON-SKELETAL RISK FACTORS
- Poor eyesight
- Poor hearing
- Poor balance
- Muscle weakness
- Reduce fall risk
- Hip protectors
EMERGING TRENDS IN POSTMENOPAUSAL OSTEOPOROSIS

• What is osteoporosis? – Decreased bone strength predisposing to an increased risk of fracture
• Why you should care – Common, significant cost, morbidity and mortality
• Whom to test and how – DXA for all women by age 65, higher risk women earlier; FRAX is a useful tool
• Whom to treat and how – Women at high risk of fracture; several agents are safe and effective
WILL YOUR BONES LAST AS LONG AS YOU DO?

Questions or comments?

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