Communication Strategies in Osteoporosis—Overcoming Barriers to Fracture Prevention

### Faculty

<table>
<thead>
<tr>
<th>Vernon Hershberger, MD, FAAFP</th>
<th>Nelson B. Watts, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Clinical Professor of Family Medicine, NEOMED (NorthEast Ohio Medical University), Rootstown, OH</td>
<td>Director, Mercy Health Osteoporosis and Bone Health Services, Cincinnati, OH</td>
</tr>
<tr>
<td>Medical Director, Daystar Clinical Research, Inc., Akron, OH</td>
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</tr>
</tbody>
</table>

### FACULTY DISCLOSURES

- **Vernon Hershberger, MD, FAAFP**
  - Investigator/Independent Contractor – AbbVie, Amgen, Pearl, Pfizer, Takeda

- **Nelson B. Watts, MD**
  - Consulting: AbbVie, Amarin, Amgen, Bristol-Meyers Squibb, Corcept, Endo, Imagepace, Janssen, Lilly, Merck, Novartis, Noven,, Pfizer/Wyeth, Radius, sanofi-aventis
  - Speaking: Amgen, Merck
  - Research support: Merck, NPS
  - Co-Founder, Stockholder and Director – OsteoDynamics
After participating in this educational activity, clinicians should be better able to:

1. Describe the burden of osteoporosis in men and women
2. Recognize skeletal differences in men and women
3. Describe the appropriate calcium and vitamin D recommendations for patients with osteoporosis
4. Discuss the balance of risks and benefits of osteoporosis and pharmacologic therapies

PRE-TEST QUESTION 1

Please rate how confident you would be treating a FEMALE patient with osteoporosis

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident
PRE-TEST QUESTION 2

Please rate how confident you would be treating a MALE patient with osteoporosis

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident

PRE-TEST QUESTION 3

Lisa is a 50 y/o woman who is concerned about osteoporosis and how to prevent it. You inform her that for women age 50, the lifetime risk of a fracture due to osteoporosis is:

1. 1 in 100
2. 1 in 50
3. 1 in 10
4. 1 in 5
5. 1 in 2
George is a 50 y/o man who would like to know about his risk of fracture. You inform him that for men age 50, the lifetime risk of a fracture due to osteoporosis is:

1. 1 in 100
2. 1 in 50
3. 1 in 10
4. 1 in 5
5. 1 in 2

Marjorie is a 65-year-old woman who wants to know if her calcium intake is optimal. She drinks one glass of milk a day, has a serving of yogurt for breakfast and either cheese during the day or ice cream at night. You tell her she should

1. Take 1500 mg calcium daily
2. Take 1200 mg calcium daily
3. Take 600 mg calcium daily
4. Continue her current dietary calcium intake
Osteonecrosis of the jaw (ONJ) with bisphosphonate treatment for osteoporosis is

1. Highest in the first year of treatment
2. More likely with OP than in cancer patients
3. Occurs in about 1 in 10 patients
4. Is always painful and progressive
5. None of the above

DEFINITION OF OSTEOPOROSIS

✧ A [silent] skeletal disorder characterized by
  – compromised bone strength predisposing to
  – an increased risk of fracture

2000 NIH Consensus Development Conference
OSTEOPOROSIS IS A SERIOUS PROBLEM

✧ 10 million Americans (8 million women, 2 million men)
✧ At age 50, lifetime risk of fracture
  – 1:2 women
  – 1:5 men
✧ 2 million fractures each year
  – More women have fractures than new strokes, heart attacks and breast cancer combined
  – More men have fractures than new heart attacks; fractures are 3 x more common than new cases of prostate cancer
✧ Direct cost $17 billion, total cost ~$35 billion

ANNUAL INCIDENCE OF OSTEOPOROTIC FRACTURES COMPARED WITH OTHER COMMON DISEASE OUTCOMES

*New and recurrent cases.
†New cases only.

MAJOR CHALLENGES

✧ Although DXA testing is inexpensive and widely available, fewer than half of older women have ever been tested

✧ Although there are safe and inexpensive medications available, persistence/adherence is poor
  – 30% of patients given a prescription for osteoporosis never have it filled
  – Fewer than half are still taking it 12 mos later

✧ Having a fracture should be a clear call to action, but 4/5 (80%) older women who have fractures are never tested or treated
FUNDAMENTAL MEASURES FOR BONE HEALTH

- CALCIUM
- VITAMIN D
- EXERCISE

Slide courtesy of Nelson Watts

“I want you to follow a healthy lifestyle... whatever the experts say that is this week.”

Copyright 2003 by Randy Glasbergen. www.glasbergen.com
Supplements won’t help
   - If you are not deficient
   - If you are deficient but the dose is inadequate
In most published studies
   - Baseline status is not known (serum 25-OH D, calcium intake/absorption) or is adequate
   - Some use dose of supplement that would not be adequate (400 IU/d of vitamin D will raise blood level by only ~3 ng/mL)
# ASSESSING CALCIUM INTAKE
(1 serving ~ 300 mg)

<table>
<thead>
<tr>
<th>Dairy</th>
<th>Amount</th>
<th>Average Servings per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>1 glass</td>
<td></td>
</tr>
<tr>
<td>Yogurt</td>
<td>6 ounces</td>
<td></td>
</tr>
<tr>
<td>Hard cheese</td>
<td>1½ ounces</td>
<td></td>
</tr>
<tr>
<td>Parmesan cheese</td>
<td>4 tablespoons</td>
<td></td>
</tr>
<tr>
<td>Ice cream</td>
<td>1½ cups</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Dairy</th>
<th>Amount</th>
<th>Average Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium-fortified orange juice</td>
<td>8 ounces</td>
<td></td>
</tr>
<tr>
<td>Sardines/salmon (with bones)</td>
<td>3-4 ounces</td>
<td></td>
</tr>
<tr>
<td>Kale, collard, turnip greens</td>
<td>1 cup</td>
<td></td>
</tr>
</tbody>
</table>

Servings per day X 300 mg

Unmeasured dietary calcium

DAILY CALCIUM ________ mg

Food labels: Add a “0” to % calcium to get mg calcium (30% = 300 mg)

---

# MARJORIE’S CALCIUM INTAKE

<table>
<thead>
<tr>
<th>Dairy</th>
<th>Amount</th>
<th>Average Servings per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>1 glass</td>
<td>300</td>
</tr>
<tr>
<td>Yogurt</td>
<td>6 ounces</td>
<td>300</td>
</tr>
<tr>
<td>Hard cheese</td>
<td>1½ ounces</td>
<td>300</td>
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<td>1 cup</td>
<td></td>
</tr>
</tbody>
</table>

Servings per day X 300 mg

Unmeasured dietary calcium + 300 mg

DAILY CALCIUM 1200 mg

Food labels: Add a “0” to % calcium to get mg calcium (30% = 300 mg)
### Calcium Supplements

<table>
<thead>
<tr>
<th>Calcium Salt</th>
<th>Calcium Content in 500 mg tab</th>
<th>Percent Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonate*</td>
<td>200 mg</td>
<td>40%</td>
</tr>
<tr>
<td>Citrate</td>
<td>105 mg</td>
<td>21%</td>
</tr>
<tr>
<td>Lactate</td>
<td>65 mg</td>
<td>13%</td>
</tr>
<tr>
<td>Gluconate</td>
<td>45 mg</td>
<td>9%</td>
</tr>
</tbody>
</table>

*Calcium carbonate should be taken with food to assure adequate absorption. Calcium/magnesium combination may be useful for patients with constipation.
**EFFECT OF EXERCISE ON SPINE BMD**

<table>
<thead>
<tr>
<th>Months</th>
<th>Lumbar Spine BMD (g/cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exercise (n=15)</td>
</tr>
<tr>
<td></td>
<td>Control (n=14)</td>
</tr>
</tbody>
</table>

**EXERCISE**

- *p<0.05
- **p<0.001


**DIETARY CALCIUM AND FRACTURES**

Warensjö E et al, BMJ 2011;342:d1473

**VITAMIN D AND MORTALITY**

Melamed ML et al, Arch Intern Med 2008;168:1629-1637
CALCIUM AND VITAMIN D SUMMARY

✧ Adequate calcium and vitamin D are necessary for optimal bone health
✧ For high risk patients, calcium and vitamin D are “necessary, but not sufficient”
✧ Calcium intake of 1000-1200 mg/d is adequate; caution against the use of over-aggressive supplementation
✧ Vitamin D 2000 IU/d is a reasonable supplement for those concerned about bone health or fall risk
✧ For higher-risk patients, measure 25-OH D and titrate dose to maintain a blood level 30-50 ng/mL

Slide courtesy of Nelson Watts

A CASE IN POINT

✧ Susan is a 65-year old woman who saw her PCP because of urinary tract infection. As her PCP was ending the visit, he said, “it’s time for you to have a bone density test. My medical assistant will give you the order.”
✧ Susan went for her bone density test a few days later. About a week after that, she received a call on home phone. The voice on the other end said:
✧ “Dr. Jones wanted me to tell you that you have osteoporosis and he has called a prescription for Alendronate to your pharmacy.”

{click}
**ARS QUESTION**

How likely is it that Susan will fill her prescription?

1. >90%
2. 70%
3. 50%
4. 30%
5. <5%

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**Primary non-adherence to bisphosphonates in an integrated healthcare setting**

K. Reynolds - P. Munter - T. C. Cheatham -
T. N. Harrison - D. E. Morisky - S. Silverman -
D. T. Gold - S. S. Vassamiphore - R. Wei -
C. D. O’Malley

AFTER 60 DAYS, 30% OF Rxs NOT FILLED!

Reynolds K et al. *Osteoporos Int* 2013; 24:2509-2517
Association between refill compliance to oral bisphosphonate treatment, incident fractures, and health care costs—an analysis using national health databases

K. R. Olsen · C. Hansen · B. Abrahamsen

WHO SHOULD HAVE A BONE DENSITY TEST?

✧ Age: ≥65 years for women; ≥70 for men
✧ Fracture after age 50
✧ A risk factor for early osteoporosis in postmenopausal women or men > age 50
  - Family history of osteoporosis
  - Low body weight
  - Smoking
  - Early menopause in women, hypogonadism in man
  - Diseases (i.e. COPD, RA, IBD)
  - Meds (i.e. SSRIs, anti-epileptics, corticosteroids, drugs to lower estrogen and androgen levels)

3. Watts NB et al, J Clin Endocrinol Metab 2012;97:1802-1822
Diagnosis and Therapeutic Guidelines

For men over age 50 and postmenopausal women

<table>
<thead>
<tr>
<th>T-score</th>
<th>Diagnosis</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;-1.0</td>
<td>Normal Bone Density</td>
<td>No pharmacologic treatment</td>
</tr>
<tr>
<td>-1.0</td>
<td>Low Bone Mass (Osteopenia)</td>
<td>Need further evaluation to decide</td>
</tr>
<tr>
<td>&lt; -2.5</td>
<td>Osteoporosis</td>
<td>Treat</td>
</tr>
<tr>
<td></td>
<td>T-score ≤ -2.5 or a hip or spine fracture</td>
<td></td>
</tr>
</tbody>
</table>

Many fractures occur in patients who have “Osteopenia”

Bone Density in Patients Who Have Non-spine Fractures
Rotterdam Study

- WOMEN
  - Normal: 44%
  - Osteopenia: 13%
  - Osteoporosis: 43%

- Men
  - Normal: 21%
  - Osteopenia: 18%
  - Osteoporosis: 61%

WHICH PATIENT WITH “OSTEOPENIA” SHOULD BE TREATED

Guidelines for Men over 50 and Postmenopausal Women

Pharmacologic therapy should be considered for all with a T-score between -1 and -2.5 if:

❖ The risk fracture over the next 10 years is high:
  - Risk of any major fracture ≥20%
  - Risk of hip fracture ≥3%


CALCULATION OF FRACTURE RISK BY FRAX

WHO Fracture Risk Assessment Tool

Welcome to FRAX

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

The FRAX® algorithm gives 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

WHO Fracture Risk Assessment Tool. www.shef.ac.uk/FRAX
Communication Strategies in Osteoporosis—Overcoming Barriers to Fracture Prevention

![FRAX WHO Fracture Risk Assessment Tool](image1)

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

**Questionnaire:**
1. Age (between 45-80 years) or Date of birth
   - Age: 69
   - Date of birth: 01/01/1944
2. Sex: Male
3. Weight (kg): 59.67
4. Height (cm): 160.02
5. Previous fracture: No
6. Parent fractured hip: No
7. Current smoking: No
8. Use of corticosteroids: No
9. Rheumatoid arthritis: No
10. Secondary osteoporosis: No
11. Alcohol or more units per day: No
12. Femoral neck BMD (g/cm²): 0.695

**Weight Conversion:**
- Pounds: 132
- Kilograms: 60

**Height Conversion:**
- Inches: 63
- Centimeters: 160.02

---

![FRAX WHO Fracture Risk Assessment Tool](image2)

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

**Questionnaire:**
1. Age (between 45-80 years) or Date of birth
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- Inches: 63
- Centimeters: 160.02

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NACE – Emerging Challenges in Primary Care: 2014

Osteoporosis - 18
Communication Strategies in Osteoporosis—Overcoming Barriers to Fracture Prevention

**FRAX®**

**WHO Fracture Risk Assessment Tool**

**Calculation Tool**

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

Country: US (Caucasian)  
Name: Smith

**Questionnaire:**

1. Age (between 40-100 years) or Date of birth
   - Age: 83
   - Date of birth: 02/03

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 intake
    - 0.593

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

BMI 23.4

The ten year probability of fracture (%)

<table>
<thead>
<tr>
<th>Fracture Type</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major osteoporotic</td>
<td>20</td>
</tr>
<tr>
<td>Hip fracture</td>
<td>2.1</td>
</tr>
</tbody>
</table>

With BMD

BMI 23.4

The ten year probability of fracture (%)

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<th>Probability</th>
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<tr>
<td>Hip fracture</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Probability:

11

2.0
Communication Strategies in Osteoporosis—Overcoming Barriers to Fracture Prevention
FRAX™: A GUIDELINE NOT A GUARD DOG: Clinical Judgment Still Required

 FRAX underestimates fracture risk in certain cases:
  – Spine density much lower than the hip
  – High dose corticosteroids
  – More than 1 fracture
  – Immobilization, diabetes, use of SSRIs, aromatase inhibitors, androgen-deprivation therapy, etc

 Treatment may be considered even if FRAX is borderline

Watts NB et al. J Bone Miner Res 2009;24:975-979

CASE STUDY: MILLIE

 73-year-old woman, no prior fractures, mother had a hip fracture
 Femoral neck T-score -2.8
 Otherwise healthy

What should be your next step in her management?

1. Laboratory tests
2. Prescribe a medication
3. Wait a year to recheck her bone density to confirm results and determine if she is still losing bone
Why?

- Other, unidentified disorders can cause low BMD &/or interfere with response to therapy
  
  - Vitamin D deficiency
  - Multiple myeloma
  - Osteomalacia
  - GI malabsorption
  - Hyperthyroidism
  - Hyperparathyroidism
  - Hypercalciuria
  - Low testosterone (in men)

- To identify contraindications to treatment
  
  - Renal insufficiency – bisphosphonates
  - Hypocalcemia – bisphosphonates and denosumab

NEXT STEP…. LABORATORY TESTING
EVALUATION OF THE PATIENT WITH OSTEOPOROSIS

✧ Careful history and examination
✧ Basic laboratory tests (all patients prior to Rx)
  – CMP (Ca, phos, Cr, alk phos, LFTs, protein)
  – CBC
  – 24-hour urine Ca (and Cr)
  – 25-OH vitamin D
  – Testosterone in men
✧ Other tests in selected patients
  – PTH; TFTs; tests for multiple myeloma, celiac disease, Cushing’s, mastocytosis, osteogenesis imperfecta
  – Bone turnover markers (urine NTX or serum CTx)

ARS Question

CASE STUDY: MILLIE

73-year-old woman, no prior fractures, mother had a hip fracture; FN T-score -2.8; Otherwise healthy; Lab tests normal
What pharmacologic agent would you prescribe?

1. Calcitonin (Miacalcin, Fortical)
2. Raloxifene (Evista)
3. Ibendronate (Boniva or generic)
4. Alendronate (Fosamax or generic)
5. Risedronate (Actonel, Atelvia)
6. Zoledronic acid (Reclast)
7. Denosumab (Prolia)
8. Teriparatide (Forteo)
FACTORS WHICH GUIDE CHOICE OF OSTEOPOROSIS THERAPY

✧ Efficacy in preventing fractures
✧ Availability/cost
✧ Route/frequency of administration
✧ Safety/tolerability
✧ Likelihood of compliance/persistence

EFFECTIVE OSTEOPOROSIS THERAPY TREATMENTS

Drug | Vertebral Fracture | Nonvertebral / Hip Fracture | FDA Approved for Men
--- | --- | --- | ---
Calcitonin (Miacalcin®, Fortical®) | ✓ | No effect demonstrated
Raloxifene (Evista®) | ✓ | No effect demonstrated
Ibandronate (Boniva®, generic) | ✓ | No effect demonstrated
Alendronate (Fosamax®, generic) | ✓ | ✓/✓ | ✓
Risedronate (Actonel®, Atelvia®) | ✓ | ✓ | ✓
Zoledronic acid (Reclast®) | ✓ | ✓ | ✓
Denosumab (Prolia™) | ✓ | ✓/ - | ✓
Teriparatide (Forteo®) | ✓ | ✓/ - | ✓

*Evidence for effect but not an FDA-approved indication
**BISPHOSPHONATES**  
**SIDE EFFECTS / SAFETY CONCERNS**

- May cause esophageal irritation (oral)
- Can cause acute phase reaction (IV and high-dose oral)
- Contraindicated in patients with hypocalcemia
- Limited to patients with good kidney function (GFR >30 or 35 mL/min)
- With long-term use, rare (but widely publicized) safety concerns:
  - Osteonecrosis of the jaw (ONJ)
  - Atypical femur fractures (AFF)

---

**BISPHOSPHONATES**  
**Rare Side Effects in Patients Treated for Osteoporosis**

- Osteonecrosis of the jaw
  - Area of poorly healing, exposed bone (usually following oral surgery or trauma; no increased risk with routine dental care)
  - Generally heals with conservative management

- Atypical femur fractures
  - Begin as stress fractures of upper lateral femur, often with prodromal pain in thigh; frequently bilateral
  - Occur in untreated as well as bisphosphonate-treated patients, but incidence appears to increase after 5 yrs on Rx
10-YEAR PROBABILITIES OF ONJ AND OTHER ADVERSE OUTCOMES

72-year-old woman with FN T-score -2.9; parent with a hip fracture

<table>
<thead>
<tr>
<th>Event</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture risk: Untreated</td>
<td>30%</td>
</tr>
<tr>
<td>Fracture risk: Treated</td>
<td>15%</td>
</tr>
<tr>
<td>Fatal MVA</td>
<td>0.11%</td>
</tr>
<tr>
<td>Murder</td>
<td>0.06%</td>
</tr>
<tr>
<td>ONJ</td>
<td>0.01%</td>
</tr>
<tr>
<td>AFF</td>
<td>0.50%</td>
</tr>
</tbody>
</table>

*Fracture risk typical of patient with osteoporosis.

REDUCING RISK FOR ONJ AND ATYPICAL FEMUR FRACTURES

✦ ONJ\(^1\)
  – Ensure good oral hygiene (conclude dental surgery prior to bisphosphonates if possible)
  – May stop bisphosphonates prior to extractions/surgery and resume after healing (*no evidence, but no harm*)

✦ Atypical femur fracture\(^2\)
  – Evaluate any patient on bisphosphonates who presents with new groin or thigh pain to rule out a femoral shaft stress fracture
  – Discontinue potent antiresorptive medication in patients with atypical fractures

\(^1\)Hellstein JW J Executive summary of recommendations from the American Dental Association Council on Scientific Affairs. ADA 2011; 142:1243-125
**HOW LONG TO TREAT?**

**FDA Statements:**

“The optimal duration of use has not been determined. All patients on bisphosphonate therapy should have the need for continued therapy re-evaluated on a periodic basis.”

Prescribing Information – all bisphosphonates.

- “Patients at low risk for fracture (e.g., younger patients w/o fracture and with BMD approaching normal after Rx), may be candidates to d/c bisphosphonate after 3 to 5 years

- “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.”


**WHEN TO CONSIDER SOMETHING OTHER THAN AN ORAL BISPHOSPHONATE**

When to Consider

IV Bisphosphonate (Reclast) or Denosumab (Prolia)

- Contraindication to oral medications
- Intolerance to oral medications
- GI disease associated with malabsorption
- Concerns about adherence

When to Consider Teriparatide

- First-line therapy for patients at very high fracture risk
- Poor response to antiresorptive therapy
CASE STUDY: DEBORAH

67-year-old Caucasian woman with FN T-score -2.7 and history of wrist fracture at age 61; her mother had a hip fracture

Medical history:
- GERD incompletely controlled with OTC PPI and antacids
- Hypertension for years -- takes meds intermittently
- Had lumpectomy and radiation for breast cancer
- Physical exam and lab evaluation are unremarkable except for eGFR 31 mL/min

What agent would you select for her treatment?

ARS QUESTION

What pharmacologic agent would you prescribe?

Medication
1. Calcitonin (Miacalcin, Fortical)
2. Raloxifene (Evista)
3. Ibandronate (Boniva)
4. Alendronate (Fosamax)
5. Risedronate (Actonel, Atelvia)
6. Zoledronic acid (Reclast)
7. Denosumab (Prolia)
8. Teriparatide (Forteo)
CHOOSING THERAPY FOR DEBORAH

- Calcitonin (Miacalcin, Fortical)
- Raloxifene (Evista)
- Ibandronate (Boniva)
- Alendronate (Fosamax)
- Risedronate (Actonel, Atelvia)
- Zoledronic acid (Reclast)
- Denosumab (Prolia)
- Teriparatide (Forteo)

Denosumab (Prolia®) broad-spectrum anti-fracture agent; SQ dosing every 6 months; no dose adjustment needed for decreased kidney function; minimal side-effects (eczema; skin infections?)

OSTEOPOROSIS IN MEN
Pharmacotherapy with or without Testosterone

- Pharmacologic therapy should be prescribed for men at high risk of fracture, whether testosterone is offered or not
- Testosterone alone might be considered if
  - high risk for fracture, but contraindications to other agents
  - Borderline risk for fracture in a candidate for testosterone therapy
- Candidates for testosterone
  - Serum testosterone level <200 ng/dL
  - Known cause (e.g., pituitary tumor)
  - Symptomatic (e.g., low libido, erectile dysfunction)
- Reduce dose or discontinue if there are side effects or no clinical improvement in symptoms

Watts NB et al, J Clin Endocrinol Metab 2012;97:1802-1822
Susan is a 65-year old woman who saw her PCP because of urinary tract infection. As her PCP was ending the visit, he said, “it’s time for you to have a bone density test. My medical assistant will give you the order.”

Susan went for her bone density test a few days later. About a week after that, she received a call on home phone. The voice on the other end said:

“Dr. Jones wanted me to tell you that you have osteoporosis and he has called a prescription for Fosamax to your pharmacy.”

POOR ADHERENCE IS COMMON IN CHRONIC “SILENT” DISEASES

- 50%-70% comply with antihypertensives\textsuperscript{1,2}
- 36%-93% with oral hypoglycemics\textsuperscript{3}
- 24%-40% with statins\textsuperscript{4,5}
- 25%-75% with osteoporosis medications\textsuperscript{6-9}
- 48% of patients did not refill a second prescription for an osteoporosis drug\textsuperscript{10}

\textsuperscript{1} Schroeder K et al, Arch Intern Med 2004;722  
\textsuperscript{2} Conlin PR et al, Clin Ther 2001;1999  
\textsuperscript{3} Cramer JA, Diabetes Care 2004;27:1218  
\textsuperscript{4} Benner JS et al, JAMA 2002;455  
\textsuperscript{5} Jackevicius CA et al, JAMA 2002;288:462  
\textsuperscript{6} Clowes JA et al, J Clin Endocrinol 2004;89:1117  
\textsuperscript{7} Papainou A et al, Osteoporos Int 2003;14:808  
\textsuperscript{8} Turbi C et al, Clin Ther 2004;26:245  
\textsuperscript{9} McCombs JS et al, Maturitas 2004;271-287  
\textsuperscript{10} Watts NB et al J Manag Care Pharm 2004;10:142
CAUSES OF POOR ADHERENCE WITH OSTEOPOROSIS MEDICATIONS

- Diagnosis not established
- Need for treatment not clear
- Side effects
- Safety concerns
- Reduced Adherence
- Complicated regimen
- Dislike taking
- Lack of feedback on effectiveness

PROBABILITY OF FRACTURE IS REDUCED BY GOOD COMPLIANCE

READINESS TO ACCEPT TREATMENT
“STATE OF CHANGE” OR TRANS-THEORETICAL MODEL

1. I have never heard of osteoporosis. I am unaware of any treatment.
2. I am aware that there are treatments, but have never thought seriously about using them.
3. I have considered using medication but have decided against it.
4. I am currently considering using medication, but have not made up my mind.
5. I have decided to use medication, but have not yet started taking it.
6. I have recently started taking medication.
7. I have been taking medication for at least 6 months.

Mauck KM et al., Osteoporos Int 2002;13:560-564

READINESS TO ACCEPT TREATMENT
21 HIP FRACTURE PATIENTS

10%  1. I have never heard of osteoporosis. I am unaware of any treatment.
51%  2. I am aware that there are treatments, but have never thought seriously about using them.
14%  3. I have considered using medication but have decided against it.
5%   4. I am currently considering using medication, but have not made up my mind.
5%   5. I have decided to use medication, but have not yet started taking it.
5%   6. I have recently started taking medication.
10%  7. I have been taking medication for at least 6 months.

Mauck KM et al., Osteoporos Int 2002;13:560-564
Communication Strategies in Osteoporosis–Overcoming Barriers to Fracture Prevention

**READINESS TO ACCEPT TREATMENT**

**21 HIP FRACTURE PATIENTS**

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**REASONS FOR DISCONTINUING TREATMENT FOR OSTEOPOROSIS**

956 women, average 7 months after initiation of treatment; 22% stopped therapy

- Side effects
- Safety concerns
- Unrelated
- Other
- Don’t need / dislike taking

Women who thought their BMD test did not show osteoporosis or were uncertain were 60% more likely to stop treatment

EVALUATION AND TREATMENT FOR OSTEOPOROSIS: NOT JUST ONE QUICK VISIT

Initial Evaluation:
Order DXA
Assess Fx Risk

Fx Risk
Borderline or High
Schedule Second Visit

Fx Risk Low
Stop for Now
Reevaluate Later

Second Visit
Review DXA/Fx Risk
Discuss Calcium and Vitamin D
Order Labs if Needed
Discuss Rx Options
Schedule Third Visit

Third Visit
Review Labs, Act if Needed
Select Rx
Schedule f/u

POST-TEST QUESTIONS
POST-TEST QUESTION 1

Lisa is a 50 y/o woman who is concerned about osteoporosis and how to prevent it. You inform her that for women age 50, the lifetime risk of a fracture due to osteoporosis is:

1. 1 in 100
2. 1 in 50
3. 1 in 10
4. 1 in 5
5. 1 in 2

POST-TEST QUESTION 2

George is a 50 y/o man who would like to know about his risk of fracture. You inform him that for men age 50, the lifetime risk of a fracture due to osteoporosis is:

1. 1 in 100
2. 1 in 50
3. 1 in 10
4. 1 in 5
5. 1 in 2
Marjorie is a 65-year-old woman who wants to know if her calcium intake is optimal. She drinks one glass of milk a day, has a serving of yogurt for breakfast and either cheese during the day or ice cream at night. You tell her she should

1. Take 1500 mg calcium daily
2. Take 1200 mg calcium daily
3. Take 600 mg calcium daily
4. Continue her current dietary calcium intake

Osteonecrosis of the jaw (ONJ) with bisphosphonate treatment for osteoporosis is

1. Highest in the first year of treatment
2. More likely with OP than in cancer patients
3. Occurs in about 1 in 10 patients
4. Is always painful and progressive
5. None of the above
POST-TEST QUESTION 5

Please rate how confident you would be treating a FEMALE patient with osteoporosis

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident

POST-TEST QUESTION 6

Please rate how confident you would be treating a MALE patient with osteoporosis

1. Not at all confident
2. Slightly confident
3. Moderately confident
4. Pretty much confident
5. Very confident
POST-TEST QUESTION 7

Which of the statements below describes your approach to diagnosing and treating female AND male patients with osteoporosis?

1. I do not manage osteoporosis, nor do I plan to this year.
2. I did not manage osteoporosis before this course, but as a result of attending this course I’m thinking of managing it now.
3. I do manage patients with osteoporosis and this course helped me change my treatment methods.
4. I do manage patients with osteoporosis and this course confirmed that I don’t need to change my treatment methods.

Thank you for your attention