Osteoporosis

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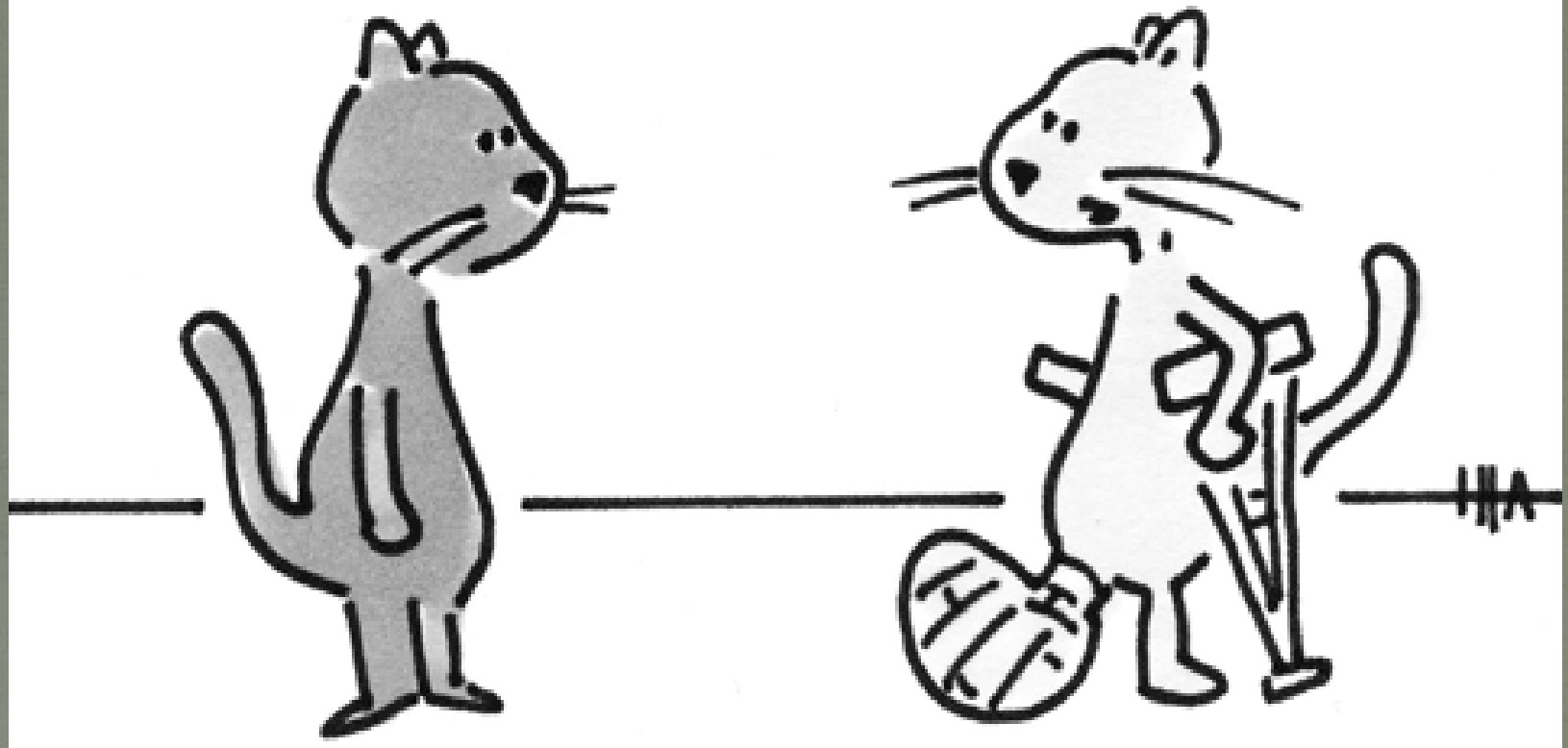
Osteoporosis

- Osteoporosis and causes of osteoporosis
- Pharmacologic treatment options for osteoporosis
- Comparison of efficacy of medications
- Common and rare adverse effects of medications
- Non oral therapeutic agents in osteoporosis
- Guidelines regarding screening and monitoring osteoporosis
- Doctors vs. Patients, compliance and adherence
- Nutritional supplements, lifestyle and complementary options
- Questions

Osteoporosis is a silent disease

- More than 40 million people in the United States have osteoporosis
- Osteoporosis makes your bones weak and more likely to break, you might not know you have it until you break a bone
- Anyone can develop osteoporosis, but it is common in older women. As many as half of all women and a quarter of men older than 50 will break a bone due to osteoporosis
- A bone mineral density test is the best way to check your bone health



"It's a good thing I was only mildly curious!"

Osteoporosis

- Many factors can play a role in women's risk of osteoporosis, including their family history and body size
- To keep bones strong, eat a diet rich in calcium and vitamin D, exercise and avoiding smoking helps
- If needed, medicines can also help

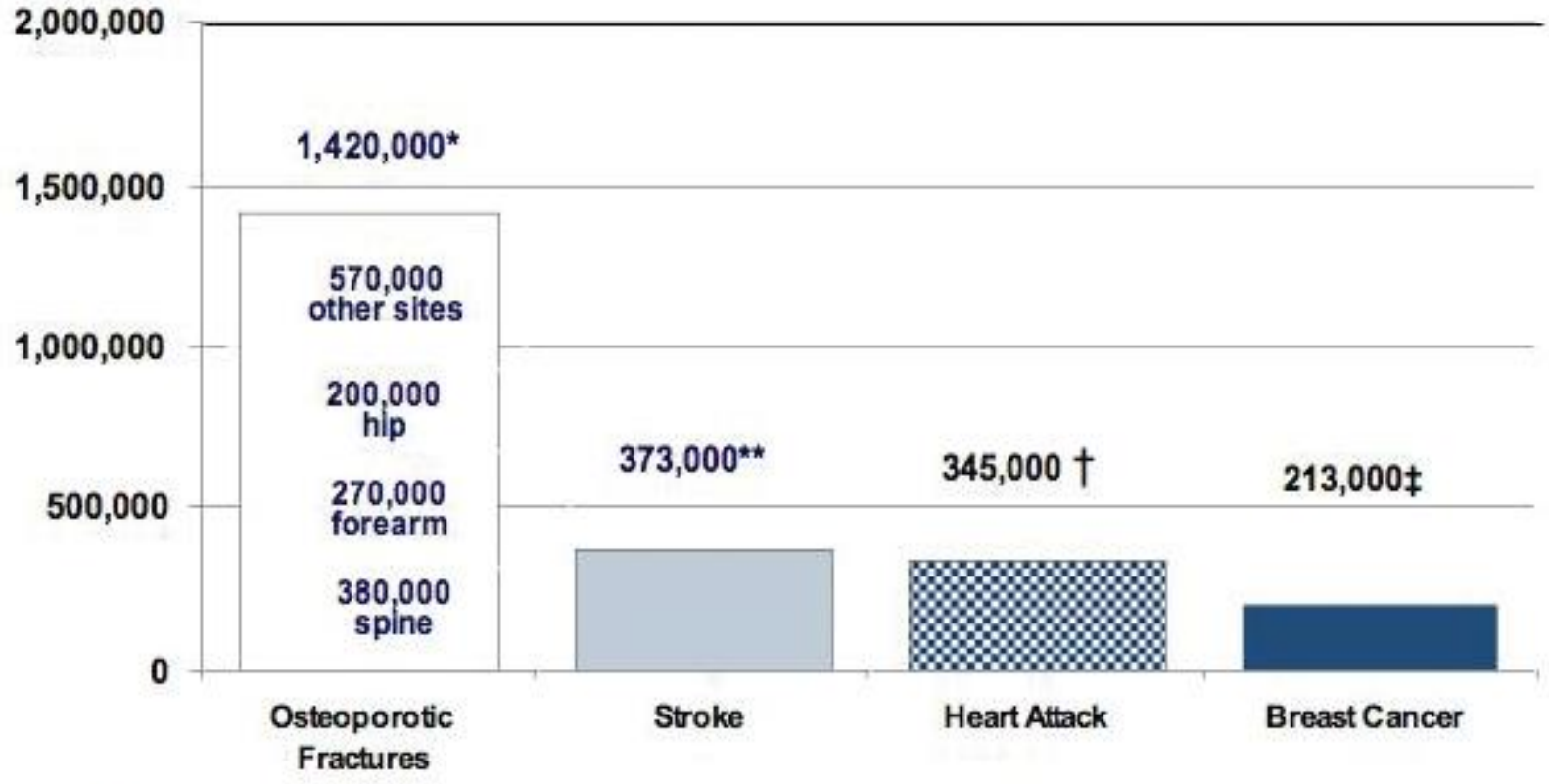
Osteoporosis related Burden on Healthcare

- **Hip** fractures are the leading cause of serious complications
- **Mortality** ; first year after hip fracture > 30% for men and about 17% for women. > **than half of hip fracture survivors** require skilled care and have permanent disability
- **Vertebral** and forearm fractures also cause major socioeconomic impact
- **2005 to 2025**, estimated osteoporosis-related fractures will increase from 2 million to 3 million, and cost will increase from $17 billion to $25 billion

ENDOCRINE PRACTICE Vol 16 (Suppl 3) November/December 2010

"It should heal by itself in a few weeks. Just for fun, would you like to make a wish?"

Annual incidence of fractures



* 2005 annual incidence all ages
** 2004 estimate
† 2004 estimate, new and recurrent
‡ 2006 new cases, women all ages

Compression fractures of the back

- Compression fractures may occur suddenly, causing severe back pain
- Compression fractures due to osteoporosis may cause no symptoms at first and may only be discovered when x-rays of the spine
- Back pain that starts slowly, which gets worse with walking but is not felt when resting
- Loss of height, as much as 6 inches over time
- Stooped over posture or kyphosis, also called a "dowager's hump"

"IT'S NOT MY OSTEOPOROSIS... I RECENTLY DISCOVERED SLOT MACHINES!"

DEXA determines bone strength

- DEXA measures T-scores as a measure of bone health, where current bone scans are compared to the expected bone density of a healthy 30-year-old

- Women with osteoporosis have a T-score of -2.5 or less, while those in the normal bone group have a T-score of -1.00 or higher, Osteopenia is middle range T-score -1.00-2.5

How healthy are your bones?

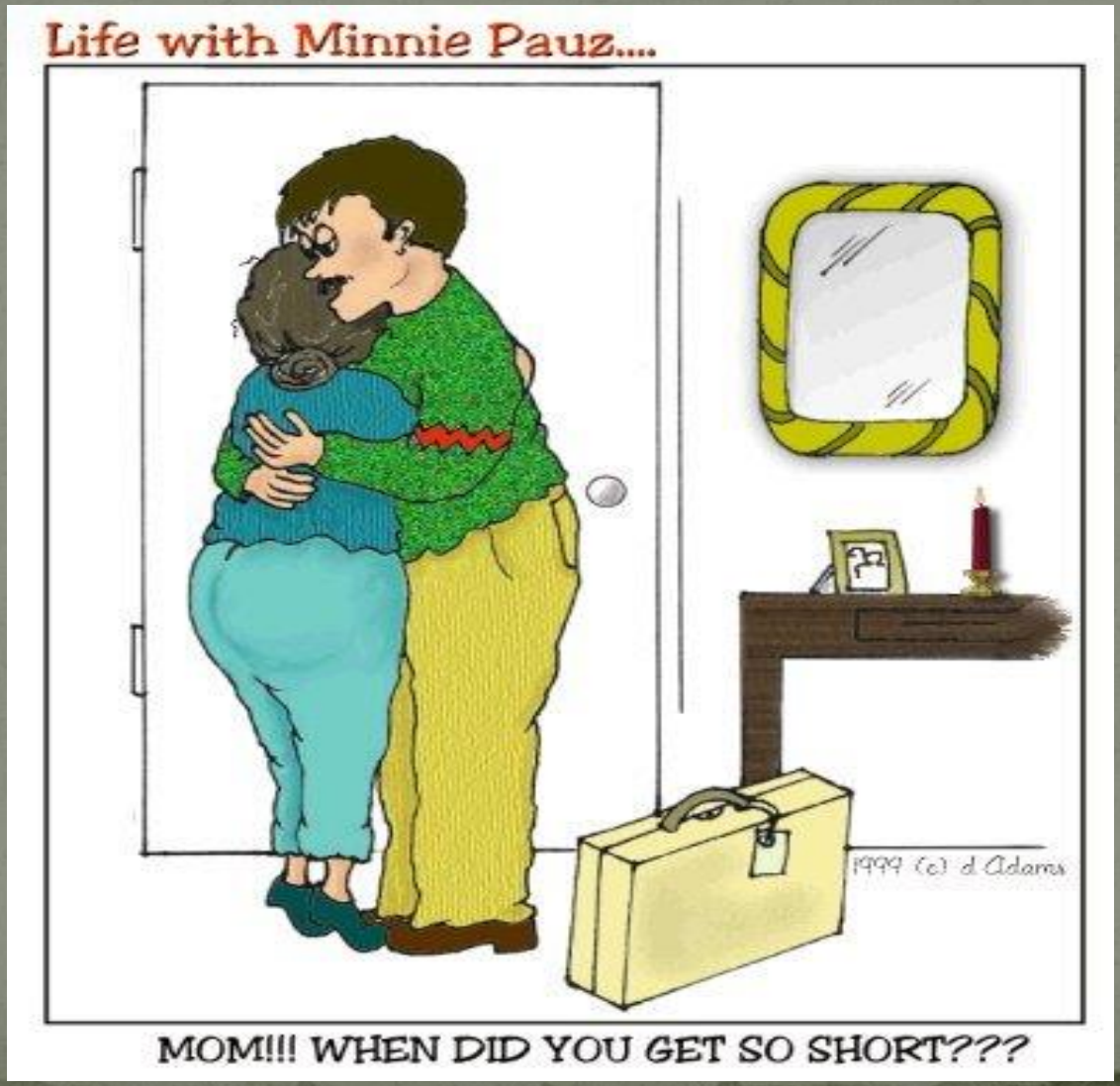
- Osteoporosis is estimated to affect 200 million women worldwide
- Do you know when you should have your first bone-density test, or when you should schedule follow-up screenings?
- Experts urge most women to have their bone density tested when they're 65 or older
- Medicare allows for repeat testing every two years
- Debate on how often women should be screened again later in life

http://www.nlm.nih.gov/medlineplus/videos/news/scan_011912.html

Are you at risk

- Being thin
- Being white or Asian
- Having a family history of osteoporosis
- Being inactive
- Not getting enough calcium and vitamin D
- Smoking cigarettes
- Drinking more than three alcoholic beverages per day
- Taking prescription steroid medicines, such as prednisone or cortisone, for a long time

Have you been asked this question?



Medical conditions causing Osteoporosis

- Serious kidney failure
- Cushing's disease (a tumour of the pituitary gland, responsible for secreting some of the body's hormones)
- Liver impairment
- Anorexia nervosa and bulimia
- Rheumatoid arthritis
- Malabsoprtion syndromes such as celiac disease
- Multiple sclerosis
- Chronic obstructive pulmonary disease (a condition affecting the airways)
- Scurvy
- Cancers, Leukemia

Hormonal imbalances causing osteoporosis

- Hyperparathyroidism: increased activity of the parathyroid glands
- Hyperthyroidism: an excessive secretion of the thyroid glands
- Diabetes
- Hypercortisolism, as a result of systemic illness or long-term use of oral corticosteroid

Medications or chemicals causing Osteoporosis

- Cigarette smoking
- Corticosteroid therapy
- Alcohol abuse
- Lithium (used to treat many psychiatric disorders)
- Aluminum
- Barbiturates
- Antacids containing aluminum
- PPI
- Coumadin

Early Ovary Removal May Raise Arthritis, Osteoporosis Risk

- Women under the age of 45 who have their ovaries removed are more likely to be diagnosed with arthritis and have lower bone mineral density
- Researchers analyzed data on more nearly 7,700 women from NHANES III, a nationally representative survey conducted between 1988 and 1994
- About 45 percent of women who had their ovaries removed were diagnosed with arthritis, compared to 32 percent of women who did not have their ovaries removed.

Heart Failure, Osteoporosis Go 'Hand-in-Hand

- Heart failure is linked to thinning of the bones and an increased risk of fractures, a new study indicates
- Heart failure was associated with a 30 percent increased risk of major fractures
- The findings suggest that aggressive screening for osteoporosis may be important for heart failure patients

http://www.nlm.nih.gov/medlineplus/news/fullstory_121663.html

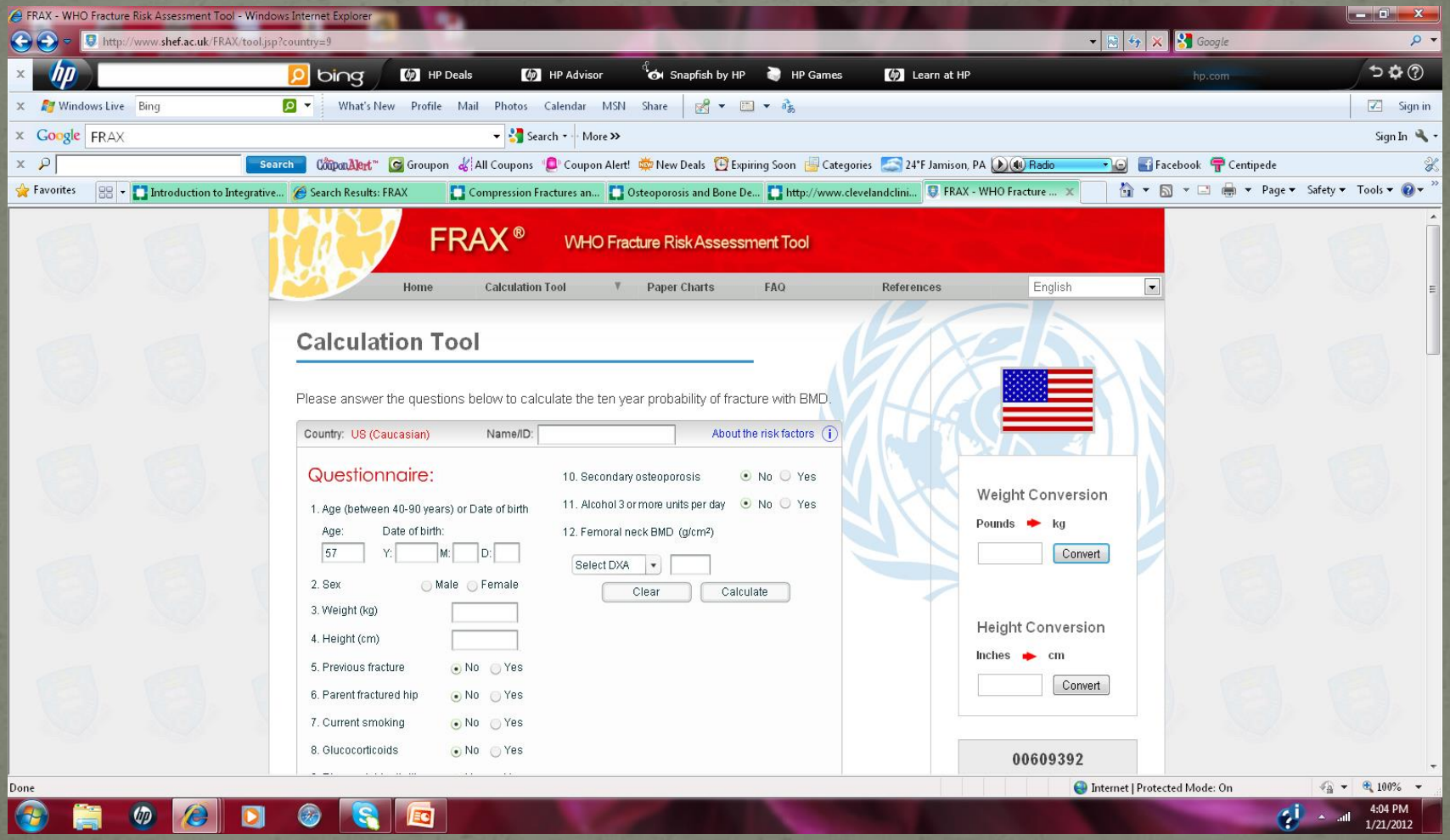
American Association of Clinical Endocrinology

- Measures to prevent bone loss calcium, vitamin D (30-60ng/ml), limit alcohol, smoking & caffeine, weight bearing exercises, adequate protein intake
- Who needs to be screened Women 65 or older, younger with increased risks, secondary osteoporosis, prevalent vertebral fractures (VFA)
- Who needs treatment fx hip, spine; T score =/>-2.5, Tscore <-2.5 w/+FRAX (major fx risk>20%, hip>3%)
- What drugs to use: *First line*: alendronate, risendronate, zolendronic acid, denosumab; *2nd line*: ibendronate ; *2nd-3rd* raloxifene *; last*: calcitonin; *failure to bisphosphonates*: teriparatide

AACE
Executive summary recommendations

- Monitor DEXA 1-2 yrs until stable then 2yrs(more discussions to follow), spine & hip, ideal if same facility, machine, technologist; bone turnover markers
- How long should treatment last mild osteoporosis 4-5 years then drug holiday, if high risk 10 years treatment then 1-2 yr drug holiday; (my opinion switching MOAs)
- What are high risk for bone loss rheumatologic diseases, endocrinopathies, malabsoprtion, renal failure or hypercalciuria, medications, malnutrition, vitamin D deficiency, neuromuscular disorders
- Who is at risk of fall elderly, frail, impaired vision & hearing, sedatives, slipper rugs etc

Fracture Risk Assessment Tool :FRAX



Risk Factors considered in FRAX

Table 2: FRAX™ Risk Factors[6]

Age	Current smoking
Gender	Glucocorticoids
Weight	Rheumatoid arthritis
Height	Secondary osteoporosis
Previous fracture	Alcohol intake
Parent fractured hip	Femoral neck T score

Putting it all together

- Is There a Place for Bone Turnover Markers in the Assessment of Osteoporosis and its Treatment?
  Jean-Pierre Devogelaer, Rheumatic Disease Clinics of North America - August 2011 (Vol. 37, Issue 3, Pages 365-386, DOI: 10.1016/j.rdc.2011.07.002)

- Serum and urine bone turnover markers with DEXA, considering clinical risk factors and FRAX calculator could best address the efficacy of treatment of osteoporosis

National Osteoporosis Foundation

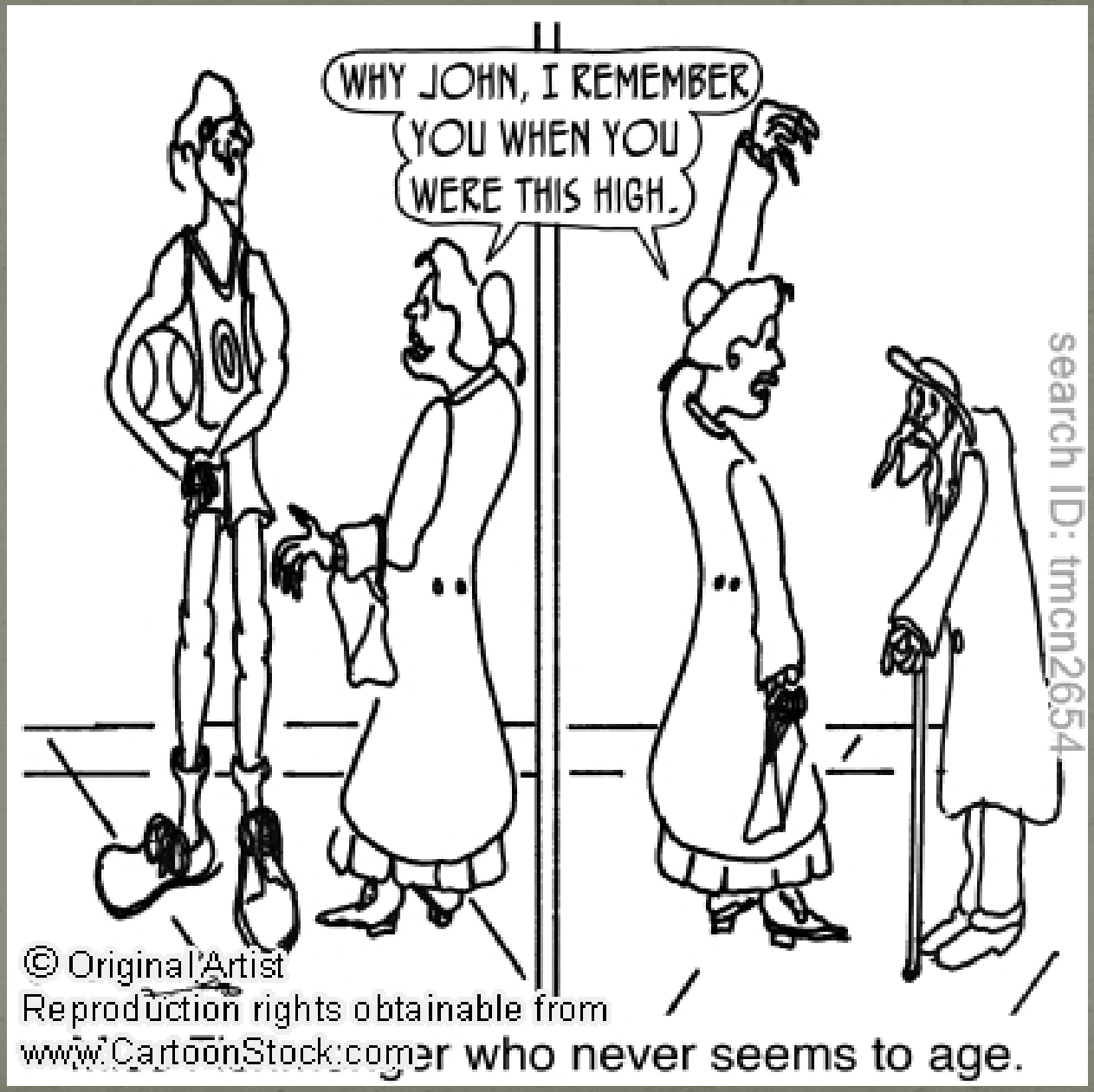
Therapy for Osteoporosis and NOF Guidelines

2008 NOF Guidelines: Treat 1) hip or spine fracture, 2) T-score hip or spine < -2.5, 3) If T-score -1.0 to -2.5 apply FRAX treat if 10-year hip fracture risk >3%, major osteoporotic fracture >20%

GLOW : Global Longitudinal Study of Osteoporosis in Women

NOF 2008 Guidelines		
By FRAX rise score- Treatment recommended		
	N (%) Treated	Odds Ratio
10 y probability of hip fracture > 3% and 10 y probability of major osteoporotic fracture > 20%	98 (64.1)	1.7 (1.1-2.6)
Either 10 y probability of hip fracture > 3% or 10 y probability of major osteoporotic fracture > 20%, but not both	70 (44.6)	0.8 (0.5-1.4)

Zhang, et al. ACR 2011. Abstract 1121.



er who never seems to age.

Bisphosphonates for Osteoporosis

Types of Bisphosphonates

Generic Names	Forms	Frequency
Alendronate	Pill or oral liquid	Daily or weekly pills, or weekly liquid
Ibandronate	Pill or IV	Monthly pills, or IV every 3 months
Risedronate	Pill	Daily, weekly, or monthly
Zoledronic acid	IV	Once a year

How do bisphosphonates work?

- Bisphosphonates slow the bone breakdown process
- Healthy bones are in a state of continuous breakdown and rebuilding. As you get older, and especially after menopause when your estrogen levels decrease, the bone breakdown process accelerates
- When bone rebuilding fails to keep pace, bones deteriorate and become weaker.
- Bisphosphonates basically put a brake on that. These drugs effectively preserve or maintain bone density during menopause — and decrease the risk of breaking a bone as a result of osteoporosis

Benefits of Bisphosphonates

- What do experts say about taking bisphosphonates?
- Experts say that benefits of taking bisphosphonates outweigh the risks for most people with osteoporosis
- Overall, when you take this type of medicine, your chance of preventing fractures is high and the risk of serious problems is low

How do you know if you're taking the right medication?

- Drugs in the bisphosphonate class are more alike than they are different. Some studies show differences in potency or effectiveness at maintaining bone density, but they're all still effective drugs.
- All bisphosphonates have been shown to reduce the chance of a fracture. The decision to take one drug over another often is based on:
- Preference
- Convenience
- Adherence to the dosing schedule

Fracture risk reduction

Summary of Evidence for Fracture Risk Reduction

Drug	Fracture risk reduction		
	Vertebral	Nonvertebral	Hip
Calcitonin (Miacalcin, Fortical)	Yes	No effect demonstrated[a]	No effect demonstrated[a]
Raloxifene (Evista)	Yes	No effect demonstrated[a]	No effect demonstrated[a]
Ibandronate (Boniva)	Yes	No effect demonstrated[a]	No effect demonstrated[a]
Alendronate (Fosamax)	Yes	Yes	Yes
Risedronate (Actonel)	Yes	Yes	Yes
Zoledronic acid (Reclast)	Yes	Yes	Yes
Denosumab (Prolia)	Yes	Yes	Yes
Teriparatide (Forteo)	Yes	Yes	No effect demonstrated[a]

[a] The lack of demonstrable effect at these sites should be considered in the context that the studies may not have been adequately powered.

Horizon trial for IV Zolendronic acid

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 3, 2007 VOL. 356 NO. 18

Once-Yearly Zoledronic Acid for Treatment of Postmenopausal Osteoporosis

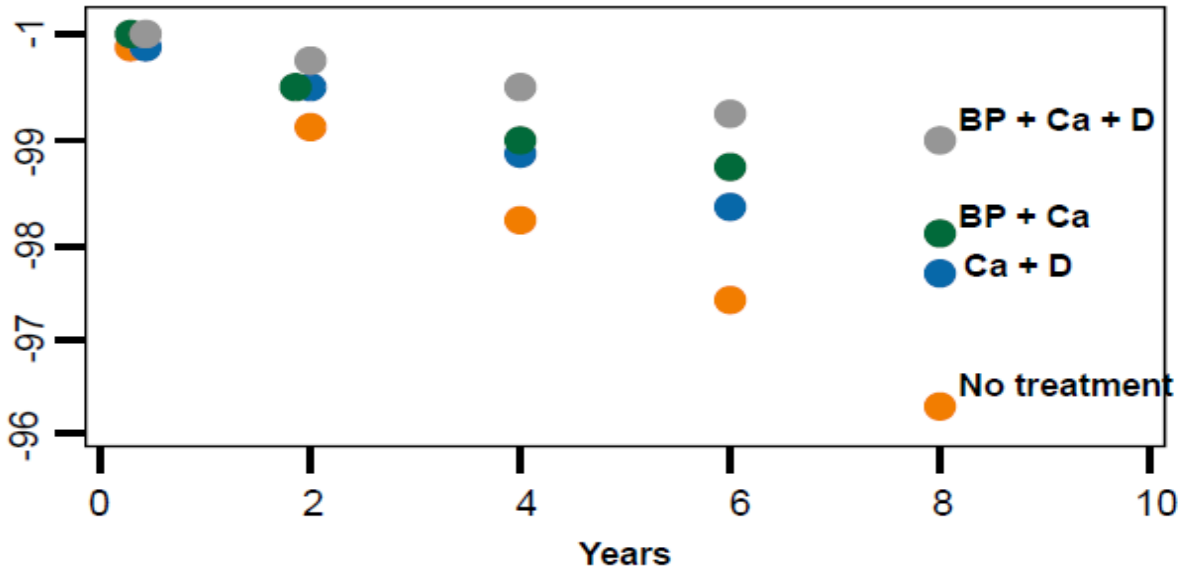
CONCLUSIONS

A once-yearly infusion of zoledronic acid during a 3-year period significantly reduced the risk of vertebral, hip, and other fractures. (ClinicalTrials.gov number, NCT00049829.)

Effects on Mortality

Reduction in MI in Bisphosphonate and Ca/Vit D Treated RA and SLE Patients

Calcium therapy linked to CV risk
Bisphosphonates reduce mortality
Risk of MI



N = 155,750 semiannual observations in 23,228 RA (93%), SLE (7%) patients 2002-2010

Wolfe, et al. ACR 2011. Abstract 2589.

Bisphosphonates for Osteoporosis: Risks

- Nausea, heartburn, swallowing problems, or irritation of the esophagus
- Pain in the muscles, joints, bones, or stomach
- Some people have reported serious side effects, but studies have shown that these are very rare
- ONJ (osteonecrosis of the jaw), a severe breakdown of bone in the jaw, usually after a major dental procedure
- Fractures of the thigh bone

How to deal with side effects

- Your doctor might give you a different kind of medicine to overcome the side effects
- For example, taking medicine through an IV or under the skin injection instead of swallowing a pill can overcome heartburn and improve bioavailability
- Discussing history of gastritis or kidney insufficiency
- Telling your doctor about dental surgery
- Informing your doctor if you have unusual pain in your thigh or hip

Myths and Facts: Bisphosphonates

- Oteonecrosis of jaw (ONJ) High incidence in cancer pts; 2-11%, enhanced risk w/concomitant use of oral steroids, chemo, dental extraction, diabetes, tobacco use
- Bone Pain very uncommon adverse effects, resolves with discontinuation
- Atrial fibrillation no definitive association, incidental or underlying c.v. disease
- Cancer no rise in risk of cancer, avoid in Barrett's esophagus; ?protective breast, colorectal cancer

Current Opinion in Rheumatology: July 2009 - Volume 21 - Issue 4 - p 363-368

Cardwell, (2012), Exposure to oral bisphosphonates and risk of cancer. International Journal of Cancer. doi: 10.1002/ijc.27389

Myths and Facts: Bisphosphonates

- Subtrochanteric and femoral shaft fractures: affect elderly, incidence increased (2002 to 2009), obesity and dementia as risk factors Journal of Bone and Mineral Research, Vol. 27, No. 1, January 2012, pp 130–137

- Teriparatide and osteosarcoma: single case, association not established, 300,000 pt(baseline risk 1:250,000/yr)

- Vigilance, rather than alarm, is needed to manage adverse events associated with bisphosphonate use for osteoporosis
  Drugs & Therapy Perspectives: 1 February 2012 - Volume 28 - Issue 2 - pp 20-23

Skeletal Bone Density and Dental Concerns

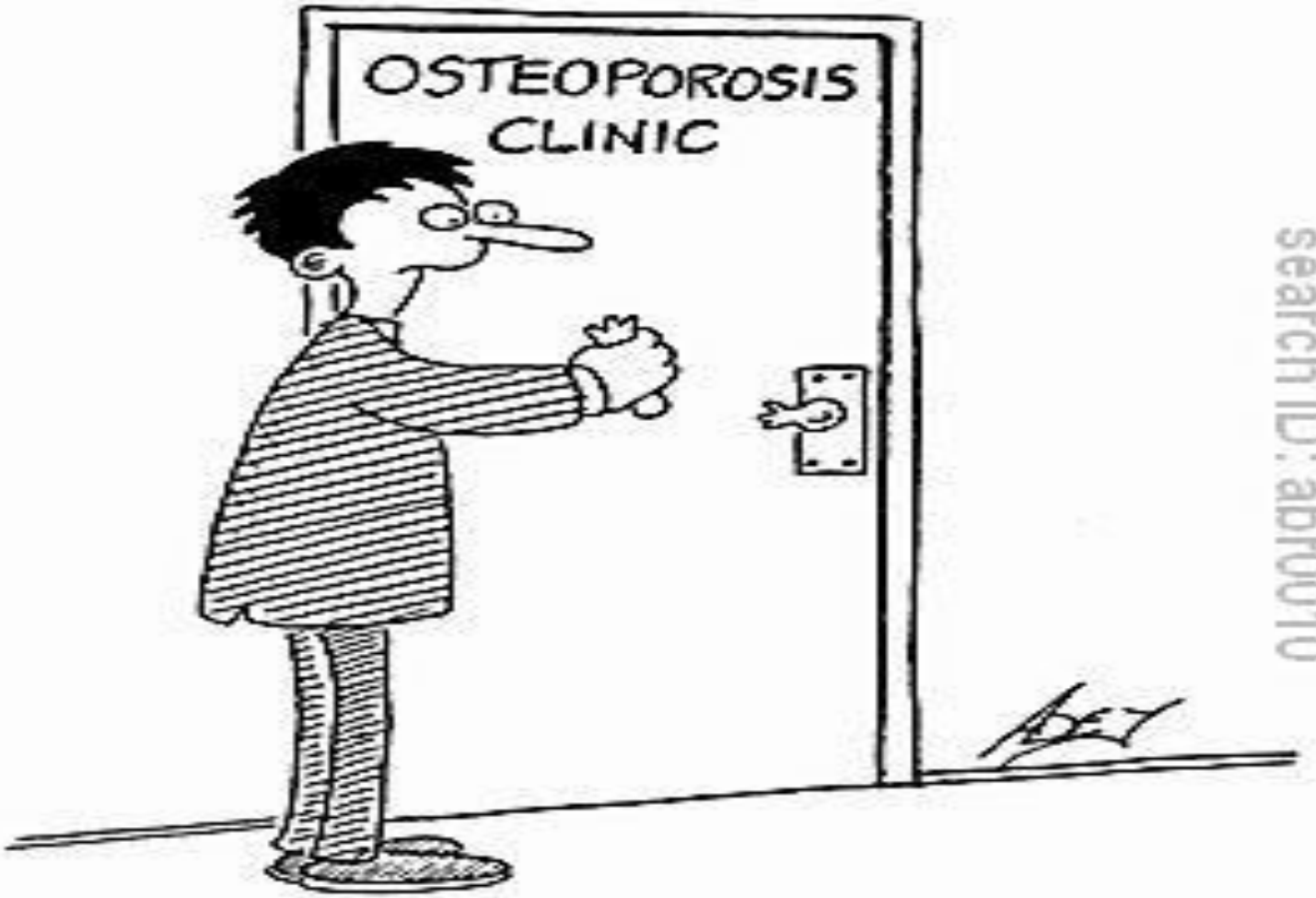
- The portion of the jawbone that supports our teeth is known as the alveolar process. Several studies have found a link between the loss of alveolar bone and an increase in loose teeth (tooth mobility) and tooth loss

- Women with osteoporosis are three times more likely to experience tooth loss than those who do not have the disease

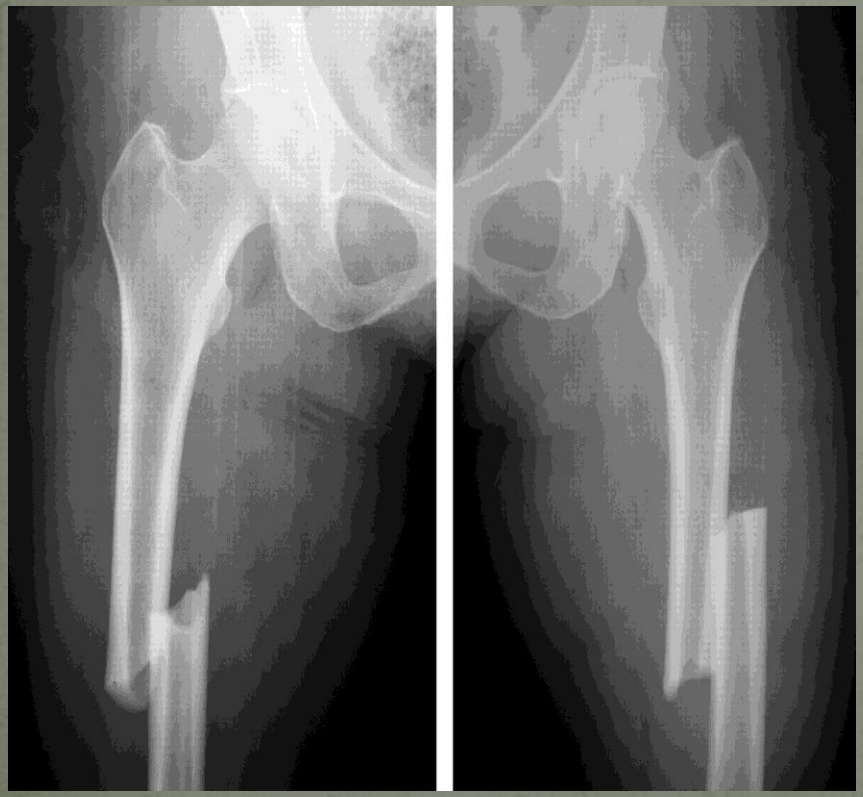
Osteoporosis and fragility fractures

- Bisphosphonates such as Fosamax, Boniva and Actonel are often prescribed for postmenopausal women or people taking steroid medications to prevent or slow the bone-weakening disease osteoporosis
- But the drugs have been linked to a small risk of unusual fractures of the femur
- One out of 1,000 taking the drugs for six years will suffer such a fracture, the researchers said

http://www.nlm.nih.gov/medlineplus/news/fullstory_121765.html



Atypical (low energy) fractures



The Journal of Bone & Joint Surgery. 2009; 91:2556-2561 doi:10.2106/JBJS.H.01774

Stop the drug after the fracture

- Stopping Bone Drug Cuts Risk of Second Thigh Fracture
- 41.2 percent who continued taking the drugs suffered a second femur fracture in the other thigh three or more years later
- In contrast, 19.3 percent of those who stopped taking the medication had a similar break
- Overall, the study revealed, subsequent atypical femur fractures dropped by 53 percent -- more than half -- when patients stopped taking bisphosphonates after the first break

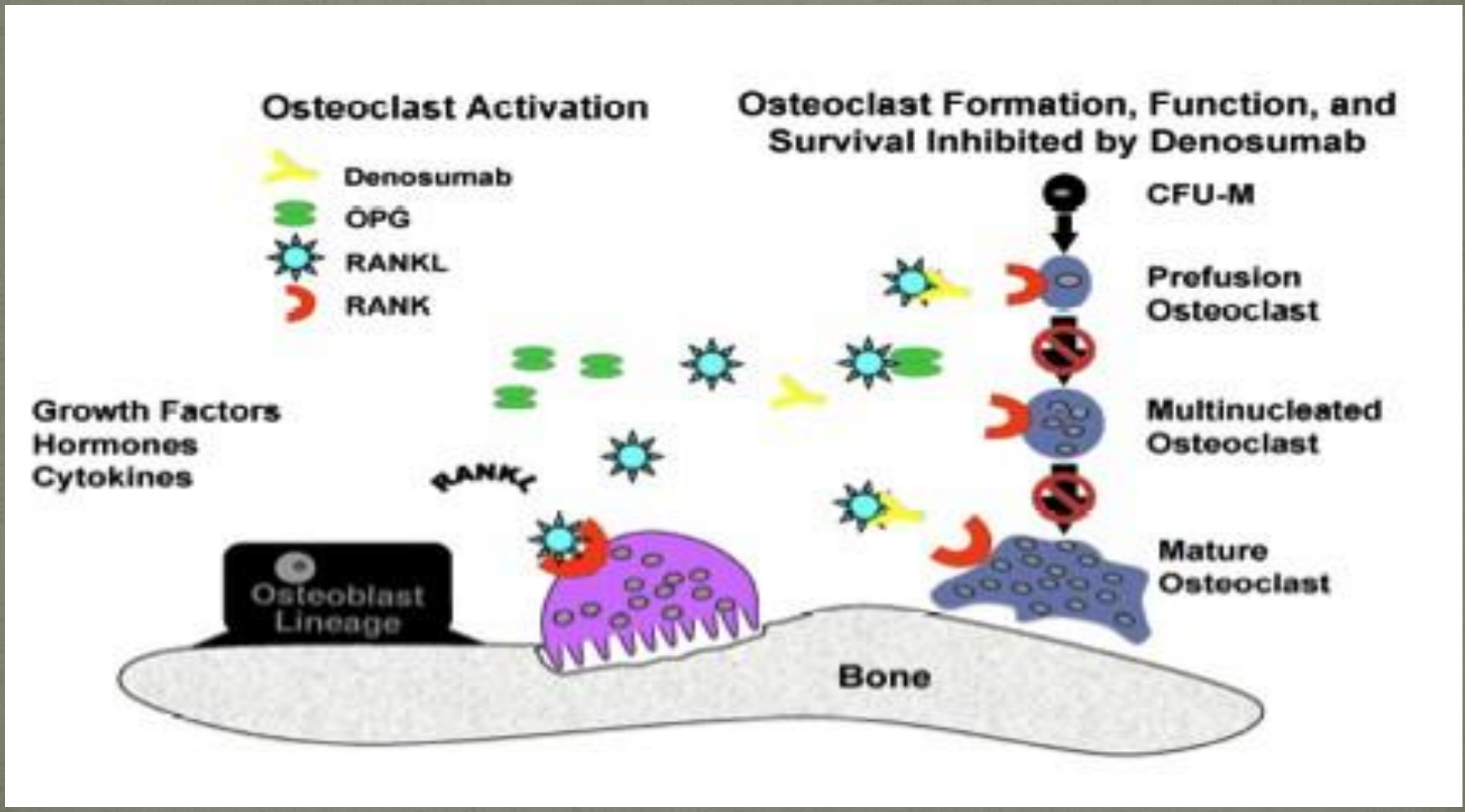
What other treatment options are available?

- Denosumab, a medicine that slows bone breakdown and reduces the risk of fractures, including hip fractures
- Estrogen a hormone that slows bone breakdown (used only by women who already take it to treat menopausal symptoms)
- Raloxifene a medicine that slows bone breakdown and reduces the risk of some types of fractures
- Teriparatide a medicine that stimulates new bone growth and reduces the risk of some types of fractures
- Calcitonin a hormone that slows bone loss

Newest FDA approved treatment

- Denosumab

Mechanism of Action



www.arcmesa.org/7153/monograph.php

FREEDOM trial for Denosumab

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Denosumab for Prevention of Fractures in Postmenopausal Women with Osteoporosis

Steven R. Cummings, M.D., Javier San Martin, M.D., Michael R. McClung, M.D., Ethel S. Siris, M.D., Richard Eastell, M.D., Ian R. Reid, M.D., Pierre Delmas, M.D., Ph.D., Holly B. Zoog, Ph.D., Matt Austin, M.S., Andrea Wang, M.A., Stepan Kutilek, M.D., Silvano Adami, M.D., Ph.D., Jose Zanchetta, M.D., Cesar Libanati, M.D., Suresh Siddhanti, Ph.D., and Claus Christiansen, M.D., for the FREEDOM Trial*

Denosumab: new kid on the block

(Trade name Prolia)

- First biologic antiresorptive therapy for osteoporosis with efficacy and safety in patients with renal impairment

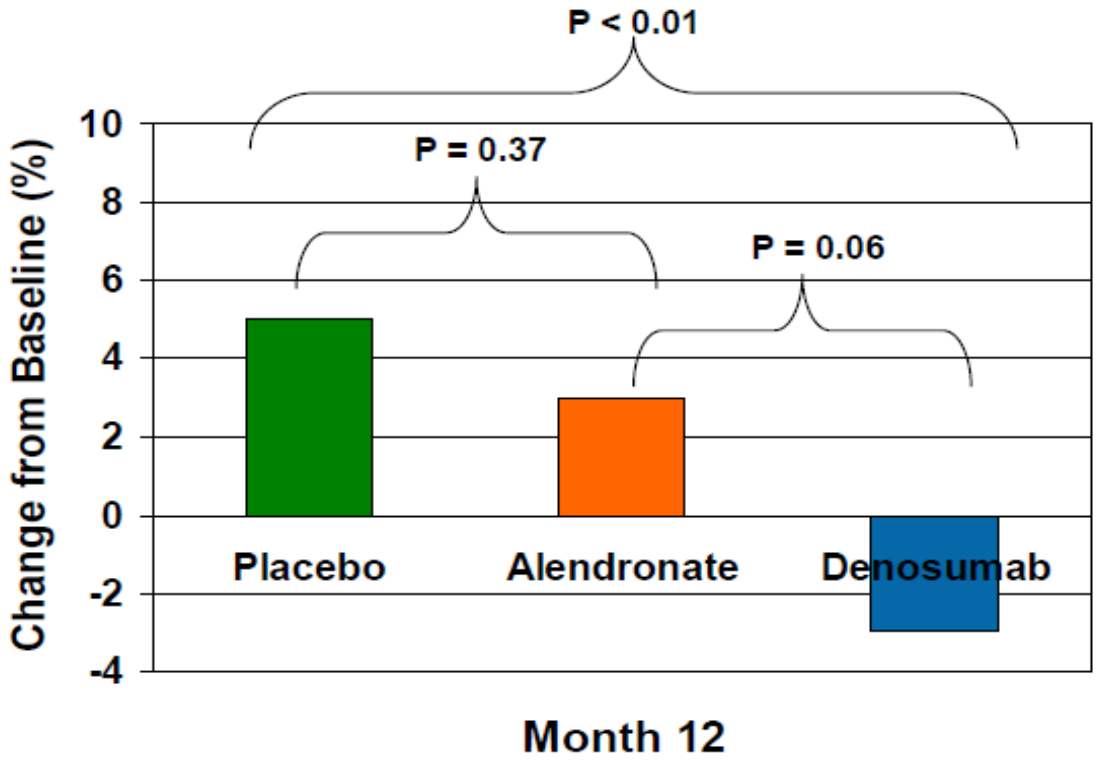
- Fully human monoclonal antibody against RANK ligand
- Released 6/2010
- Antiresorptive agent but rapid offset compared to Bps(which bind avidly to bone and remain in bone for extended time intervals)
- RANKL- RANK interaction, leads to osteoclastogenesis
- Denosumab reduces osteoclastogenesis to reduce resorption and improve bone density
- 60mg administered by subcutaneous injection every six months

The RANKL Pathway and Denosumab Robin K. Dore , Rheumatic Disease Clinics of North America - August 2011 (Vo 37, Issue 3, Pages 433-452, DOI: 10.1016/j.rdc.2011.07.004)

Cortical Bone Porosity

Denosumab Decreases Cortical Porosity

Denosumab Decreases Cortical Porosity at the Distal Radius in Postmenopausal Women with Low BMD



-8.18% vs PBO, -5.84% vs Aln

N = 247 women

Porosity calculated by HRpQCT

Libanati, et al. ACR 2011. Abstract 1631.

Freedom Extension Data

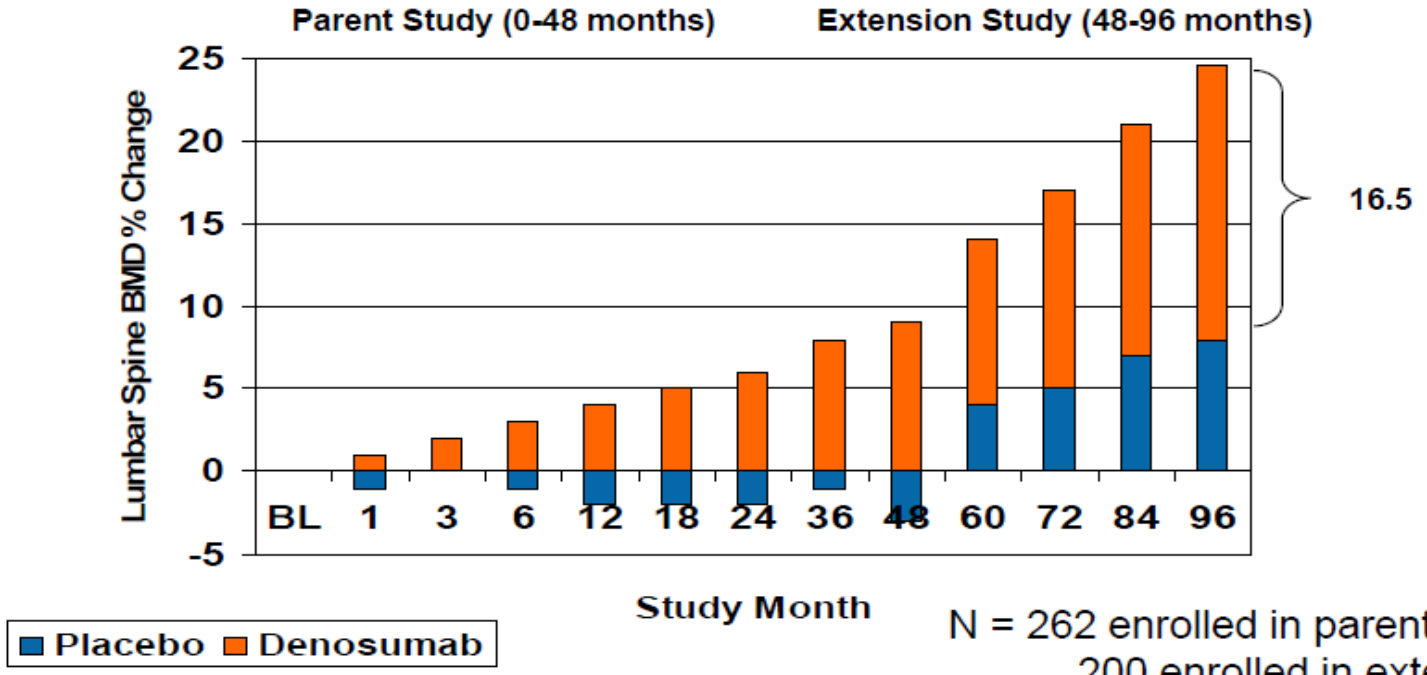
Late Breaking 8: Denosumab, FREEDOM Extension 3-Years

- Open-label, active-treatment FREEDOM Extension Study : 7-year extension of 3-year FREEDOM Trial
- 4550 women enrolled
- Cumulative 6-year gains:
  - **Lumbar spine = 15.2%**
  - **Total hip = 7.5%**
- 4 cases of ONJ through 6-years

Lumbar BMD

Denosumab Lumbar Spine BMD Over 8 Years

Percent Change in Lumbar Spine BMD From Parent Study Baseline

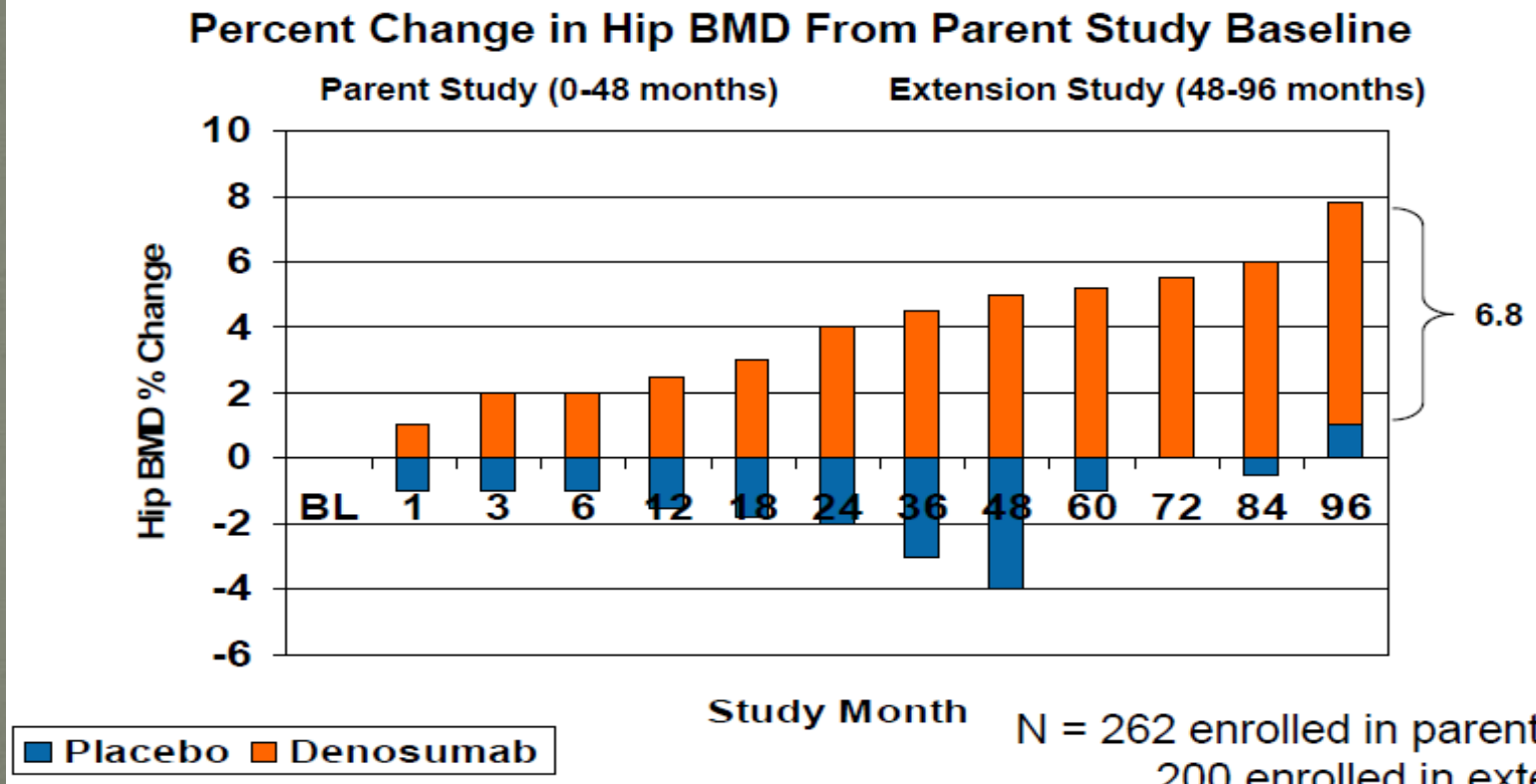


N = 262 enrolled in parent study
200 enrolled in extension
138 completed 8-years

McClung, et al. ACR 2011. Abstract 1107.

Hip BMD

Denosumab Total Hip BMD Over 8 Years



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McClung, et al. ACR 2011. Abstract 1107.

Safety Data

Denosumab Adverse Events Years 4-5

Yearly Incidence of Serious Adverse Events of Infection

		Freedom			Extension	
		Year 1 r(n)	Year 2 r(n)	Year 3 r(n)	Year 1 r(n)	Year 2 r(n)
Cellulitis or Erysipelas	Cross-over (Pbo/DMab)	0	0	< 0.1 (1)	0	< 0.1 (1)
	Long-term (DMab/DMab)	0.1 (4)	< 0.1 (1)	0.2 (8)	< 0.1 (2)	< 0.1 (1)

r = exposure adjusted subject incidence per 100 subject years

Brown, et al. ACR 2011. Abstract 1103.

Safety Data

Denosumab Adverse Events Years 4-5

Yearly Incidence of Serious Adverse Events of Infection

		Freedom			Extension	
		Year 1 r(n)	Year 2 r(n)	Year 3 r(n)	Year 1 r(n)	Year 2 r(n)
All SAEs of Infection	Cross-over (Pbo/DMab)	1.1 (42)	1.4 (50)	1.4 (48)	1.5 (33)	1.6 (32)
	Long-term (DMab/DMab)	1.5 (56)	1.6 (58)	1.6 (54)	1.3 (30)	1.2 (26)

r = exposure adjusted subject incidence per 100 subject years

Brown, et al. ACR 2011. Abstract 1103.

Denosumab vs. Bisphosphonates

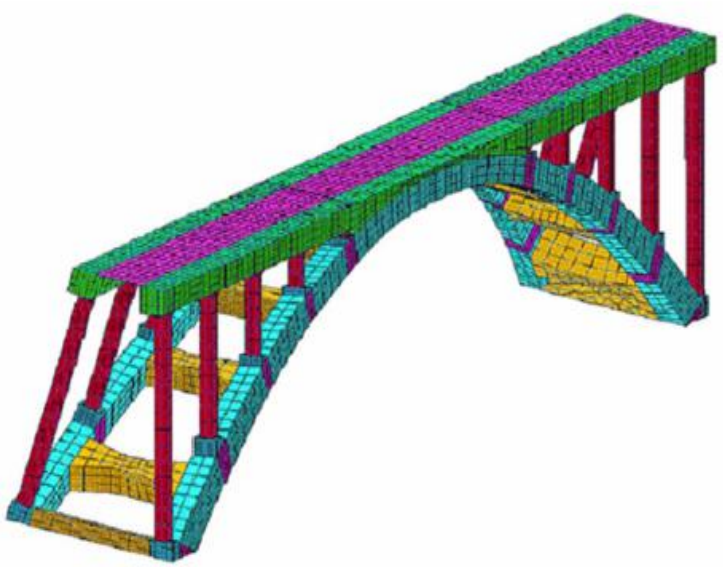
- Increased bone mineral density lumbar 15%, hip 7%, reduced risk of all type of fractures
- Blocks the formation, function and survival of osteoclasts vs. BNP block the function and survival but not formation
- Magnitude of vertebral risk reduction similar to IV Zolendronic acid and greater than oral bisphosphonates
- Median reduction in bone resorption 86% in 1 month, more than other anti resorptive agents
- Better than IV Zolendronic acid (bone metastasis)
- Better adherence to oral agents, 50% pts stop oral agent in 1yr

Teriparatide

- FORTEO (teriparatide [rDNA origin] injection) for subcutaneous use, U.S. Approval: 2002
- Recommended dose is 20 mcg subcutaneously once a day
- Administered into the thigh or abdominal wall
- Maximum use of the drug no more than 2 years (life time)

Teriparatide-Anabolic agent

Finite Element Analysis



Model of a bridge with the different colors representing different material properties.

With permission: Igor Lozovitski of the Lozik Group

Teriparatide Finite Element Analysis Strength

Change from Baseline to Month 18 (%)

Median (interquartile range)		
Outcome	**Vertebra (n=30)**	**Femur (n=26)**
Strength	16.6 (7.4, 24.7)*	2.3 (-1.6, 6.8)*

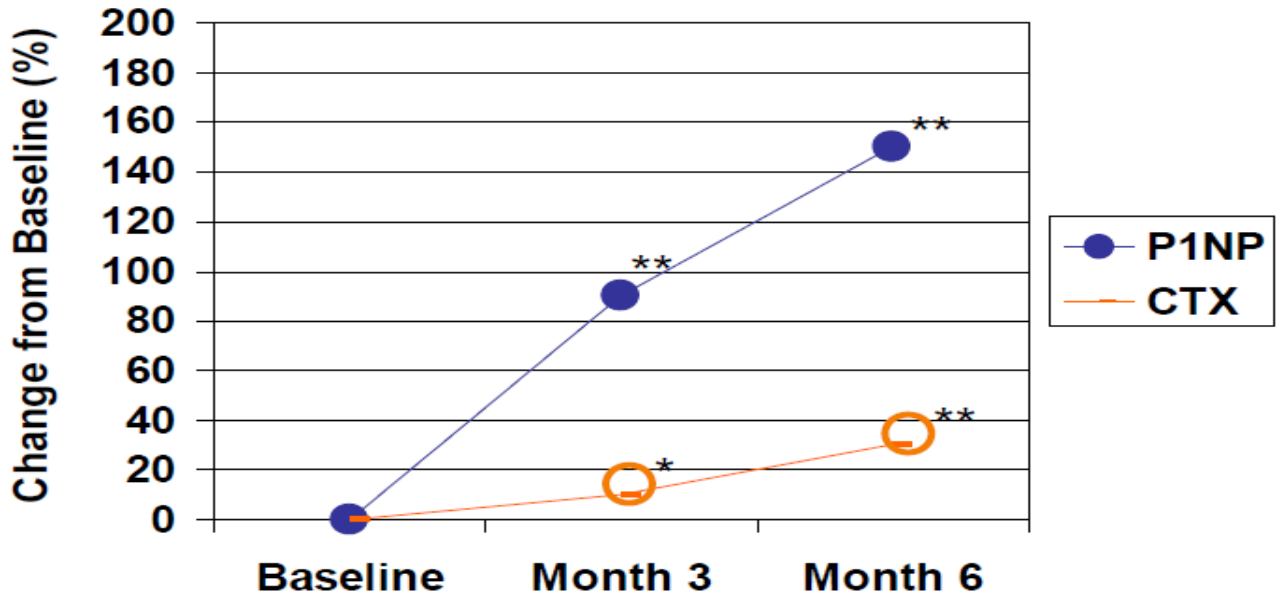
Mean (standard deviation)		
Areal BMD	**Vertebra (n=25)**	**Femur (n=28)**
Lumbar spine	6.3 (5.0)**	
Femoral neck		1.8 (4.8)
Total hip		0.2 (3.4)

*P<0.05 vs baseline
**P<0.0001 vs baseline

Keaveny, et al. ACR 2011. Abstract 1099.

Teriparatide
Anabolic agent

Teriparatide Bone Turnover Markers



*P<0.05 vs baseline
**P<0.0001 vs baseline

Keaveny, et al. ACR 2011. Abstract 1099.

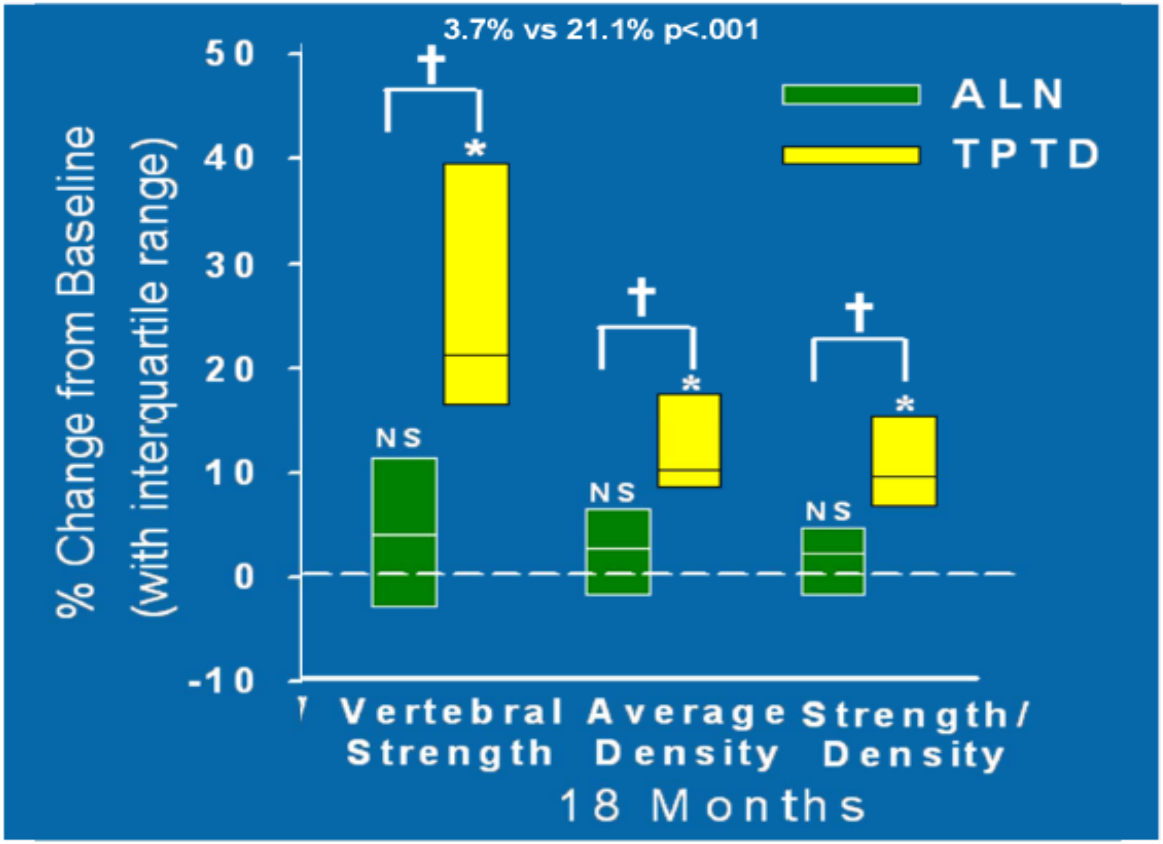
Forteo Microchip

- Implanted Microchip Might Be Future of Drug Delivery for drugs, a study looked at Forteo
- In small study, the remote-controlled chip emitted a bone-strengthening medicine for a year
- Blood tests done after the 12-month study period indicated rates of bone formation similar to when the women self-injected the drug
- Roughly 1.5-by-2.5 inches in size, the microchip significantly improved patient compliance with a drug regimen that normally requires painful daily self-injections

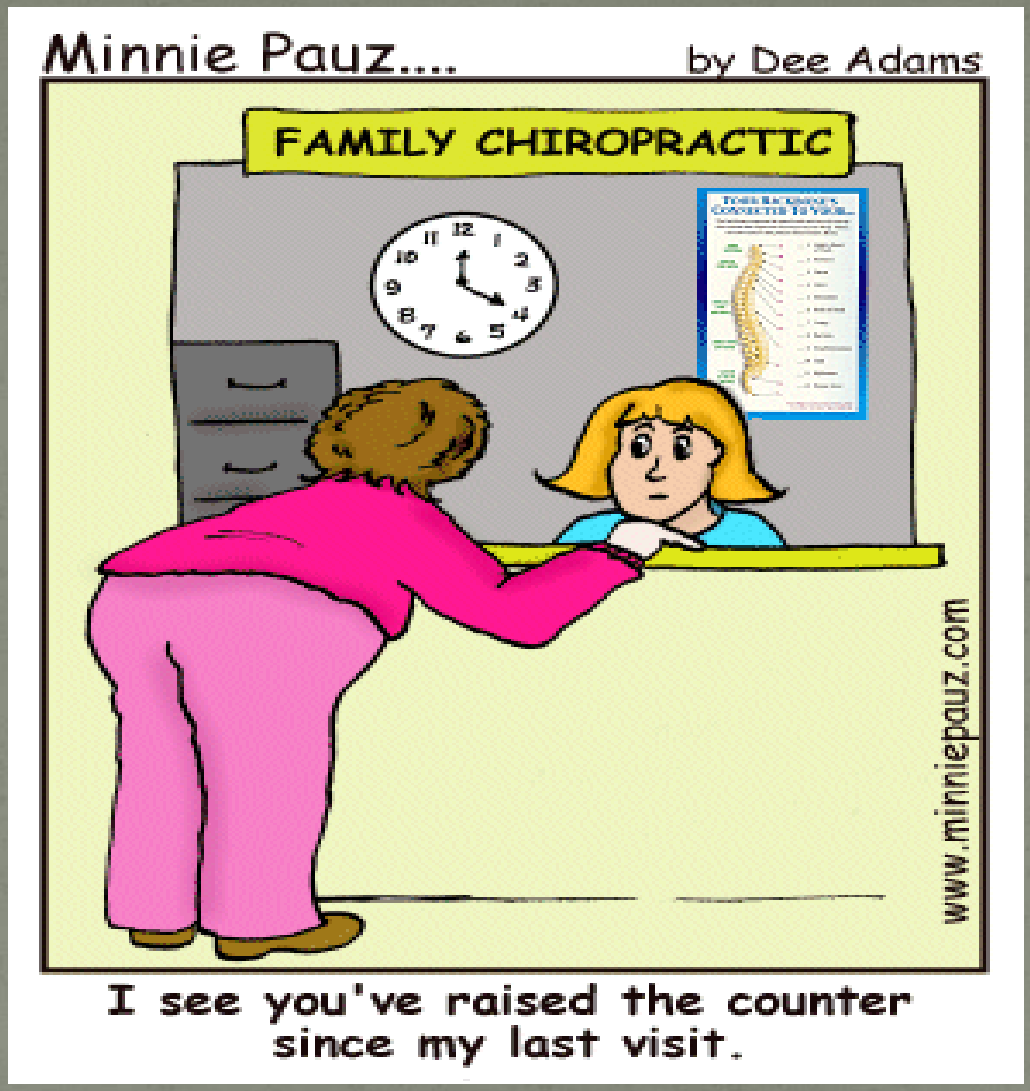
http://www.nlm.nih.gov/medlineplus/news/fullstory_122017.html

Teriparatide and Vertebral strength

Effects of Teriparatide and Alendronate on Parameters of Vertebral Strength



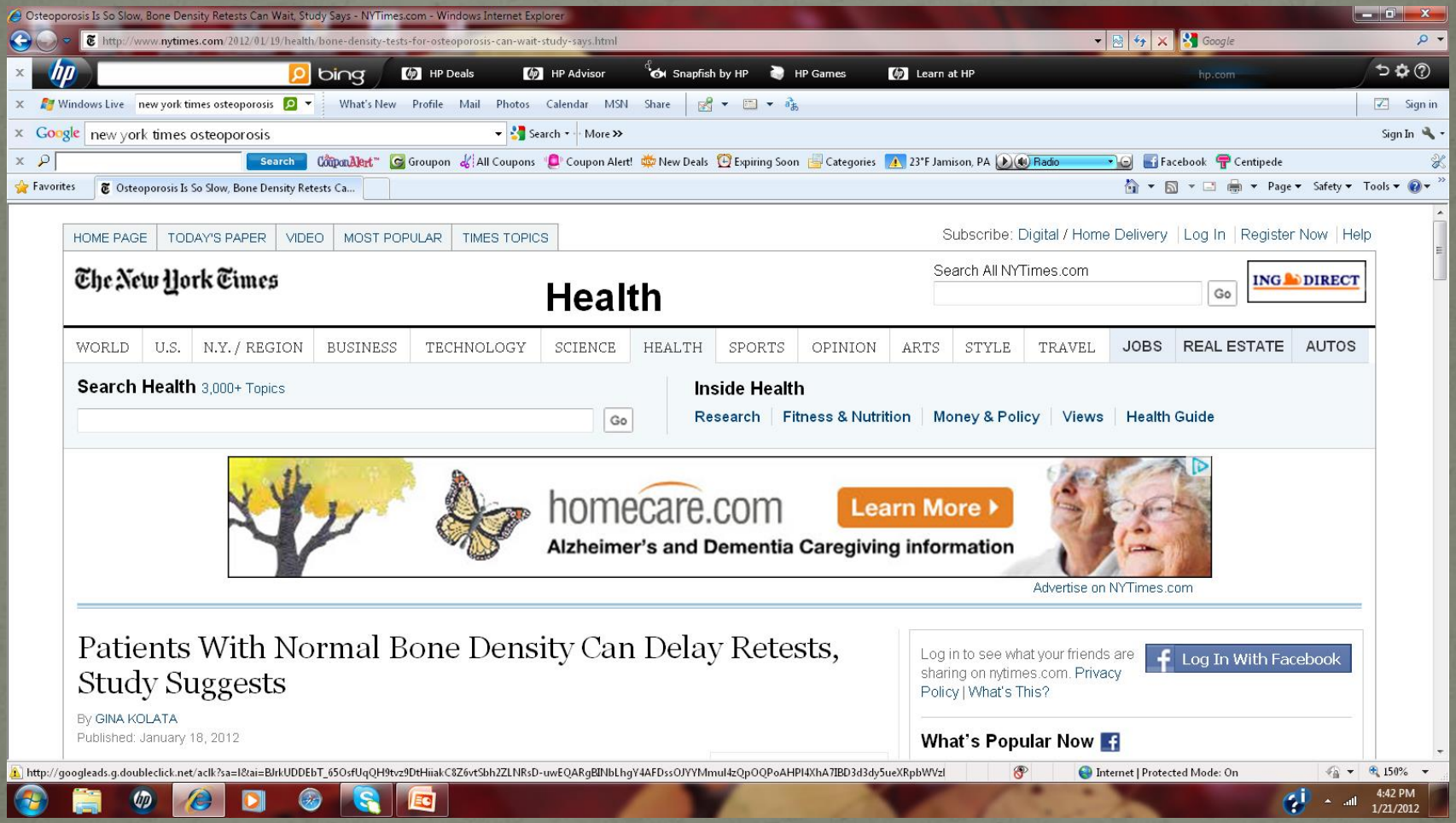
Keaveny, et al. *J Bone Min Res* 2007;22(1):149-57.


Minnie Pauz....
by Dee Adams
FAMILY CHIROPRACTIC
www.minniepauz.com
I see you've raised the counter since my last visit.

Vertebroplasty for Spine Fracture Pain

- Percutaneous vertebroplasty is a procedure that involves placing a small needle into the crushed bone
- Needle is guided into position using special X-ray equipment, so open surgery isn't necessary.
- Once the needle is in position, a bone cement is injected into the bone to secure it. Several crushed bones can be treated at the same time.
- The procedure generally takes about one hour for each bone that is treated. It is usually done using only numbing medicine (local anesthetic).
- Some patients who are in severe pain may need extra medicine to make them sleepy. Usually, patients can leave the hospital a few hours after the procedure is done.

DEXA debate in New York Times



Bone Density Testing

Some Women Can Go Longer Between Bone Checks: Study

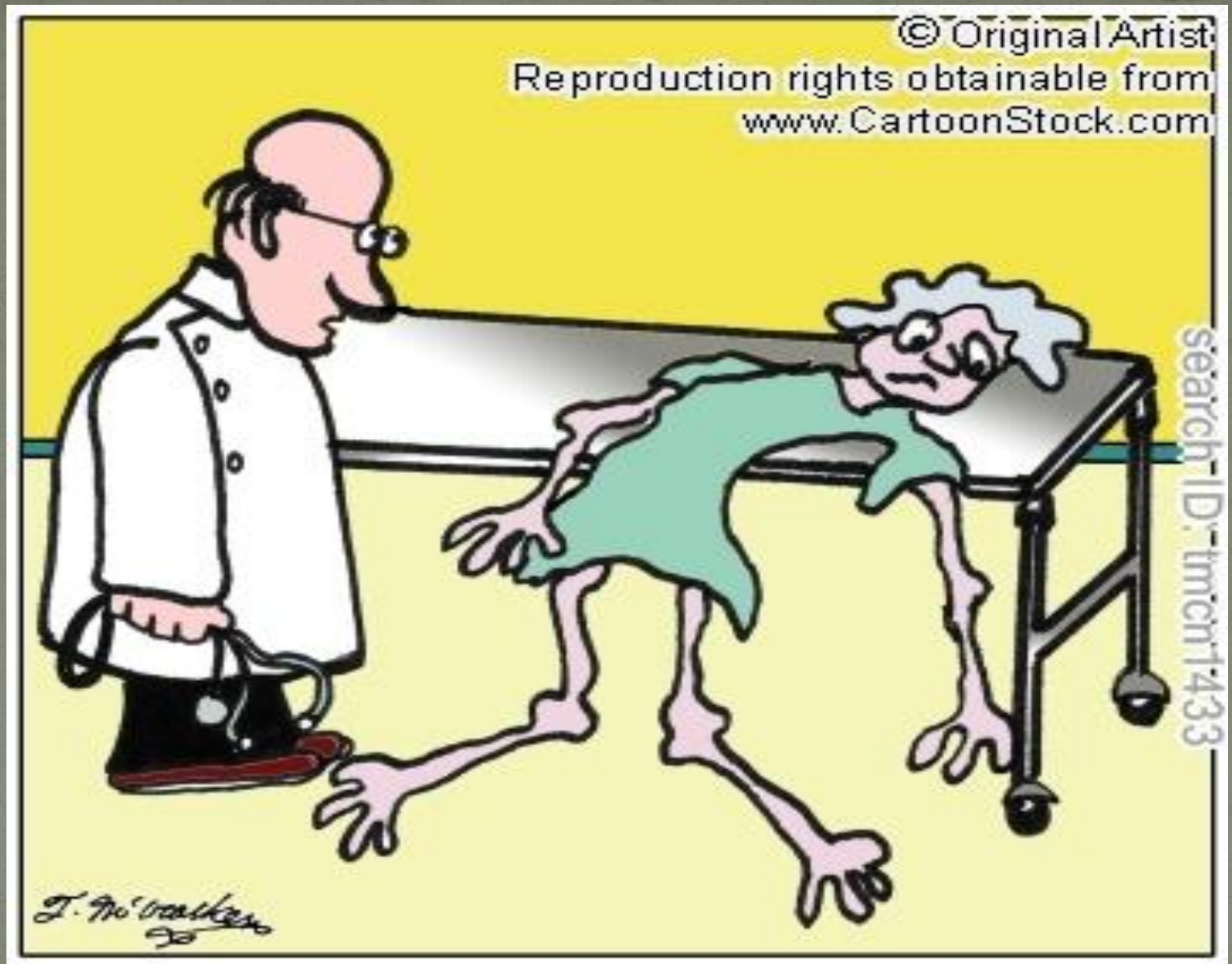
- In a new study, researchers followed nearly 5,000 older women for up to 15 years. None had osteoporosis at the beginning, but some had lower bone density
- The researchers found that less than 10 percent of women with normal or nearly normal bone density developed osteoporosis at about 15 year interval.
- However, for women with moderately low bone density to start, 10 percent would develop osteoporosis after only about 4 1/2 years
- And for those with advanced low bone density, 10 percent would move on to osteoporosis in just about a year

Effectiveness Vs Adherence

- Postmenopausal osteoporosis screening, cost-effective, initiation at age 55 years Cost-Effectiveness of Different Screening Strategies for Osteoporosis in Postmenopausal Women Author(s): Nayak Smita , Annals of Int Medicine, Volume: 155 Issue: 11

- Patients are prepared to accept higher absolute fracture risk than doctors Differing perceptions of intervention thresholds for fracture risk: a survey of patients and doctors: Osteoporosis International Url: http://dx.doi.org/10.1007/s00198-011-1823-7

- Only a third of patients agree to second administration of Zolendronic acid Persistence with intravenous zoledronate in elderly patients with osteoporosis, Osteoporosis International, http://dx.doi.org/10.1007/s00198-011-1881-x



"Mary, you haven't been taking your calcium pills, have you?"

Poor Adherence

Adherence to Intravenous Zoledronic Acid (ZA) and Ibandronate (IB)

- Medicare database
  - 15,100 new users ZA
  - 7,120 new users IB
- 65.7% of ZA users persisted beyond 1-year
- 34.6% of IB users persisted beyond 1-year
- Persistance for ZA greater than oral bisphosphonates
- Factors associated with adherence
  - **Males, age 85+, GC use, prior fractures**
  - **Infusion by IM, Rheum, Endo vs Oncologist**

Curtis, et al. ACR 2011. Abstract 1101.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OSTEOPOROSIS
CLINIC
search ID: sden985

GIO and osteoporosis treatment

Use of Bisphosphonates for Prevention of GIO in RA

- Administrative data (Canada) identified 37,151 RA cases
- 21,547 GC courses >3m, >5mg
- 8,692 (40.3%) received a bisphosphonate (BP)
- 33.0% received a BP before 2000
- 46.7% received a BP after 2000
- 2010 ACR Guidelines recommend treatment in all subjects if dose >7.5mg >3m, and at lower doses based on FRAX 10-yr risk

Lacaille, et al. ACR 2011. Abstract 804.

HCP: Room for improvement

Treatment of Osteoporosis after Hip Fracture

- Hip fracture cases between 2000-2010
- 420 patients evaluated for osteoporosis treatment
- Median age = 80 (65-95)
- Male 27%
- 13.8% had DXA after discharge
- 19% received treatment (8.0% males, 23.1% females)
- Evaluation and treatment after hip fracture remains low

Antonelli, et al. ACR 2011. Abstract 870.


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BALdwin
"Calcium supplements: aisle three, bottom shelf."

Diet and nutritional supplements

- Eat a diet rich in calcium and vitamin D. This may include dairy products (i.e., milk, yogurt and cheese), vegetables (i.e., spinach and broccoli) and fish (i.e., sardines)
- Because it is difficult to meet the daily requirement through diet alone, calcium and vitamin D supplements are recommended
- A strong body of evidence from rigorous testing substantiates the importance of vitamin D and calcium in promoting bone health


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"I think we can rule out osteoporosis."

Health Tip: Exercise for Healthier Bones

- The Cleveland Clinic offers these suggestions for boosting your bone health
- Get low-impact exercise via activities such as swimming, walking and biking
- Perform gentle stretching and strengthening exercises.
- Perform weight-bearing exercises such as dancing, climbing stairs, hiking and tennis
- Play sports such as golf that are relatively easy on the bones and joints

Reducing the risk of falling

- **Balance** is the ability to maintain your body's stability while moving or standing still. You can improve your balance with activities such as tai chi and yoga.
- **Flexibility** refers to the range of motion of a muscle or group of muscles. You can improve your flexibility through tai chi, swimming, yoga, and gentle stretching exercises.
- **Strength** refers to your body's ability to develop and maintain strong muscles. Lifting weights will increase your strength.


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Smart Moves

- Walking
- Strength training
- Dancing
- Tai chi
- Stair climbing
- Hiking
- Bicycling

What is "Weightbearing“?

- Activity you do on your feet that works your bones and muscles against gravity.
- With weightbearing exercise, your bone adapts to the impact of weight and pull of muscle by building more cells and becoming stronger
- Brisk walking, jogging, and hiking.
- Yard work such as pushing a lawnmower and heavy gardening
- Team sports, such as soccer, baseball, and basketball
- Dancing, step aerobics, and stair climbing
- Tennis and other racquet sports
- Skiing, skating, karate, and bowling
- Weight training with free weights or machines


STOP
ClipartOf.com/7180

Indoor safety checklist

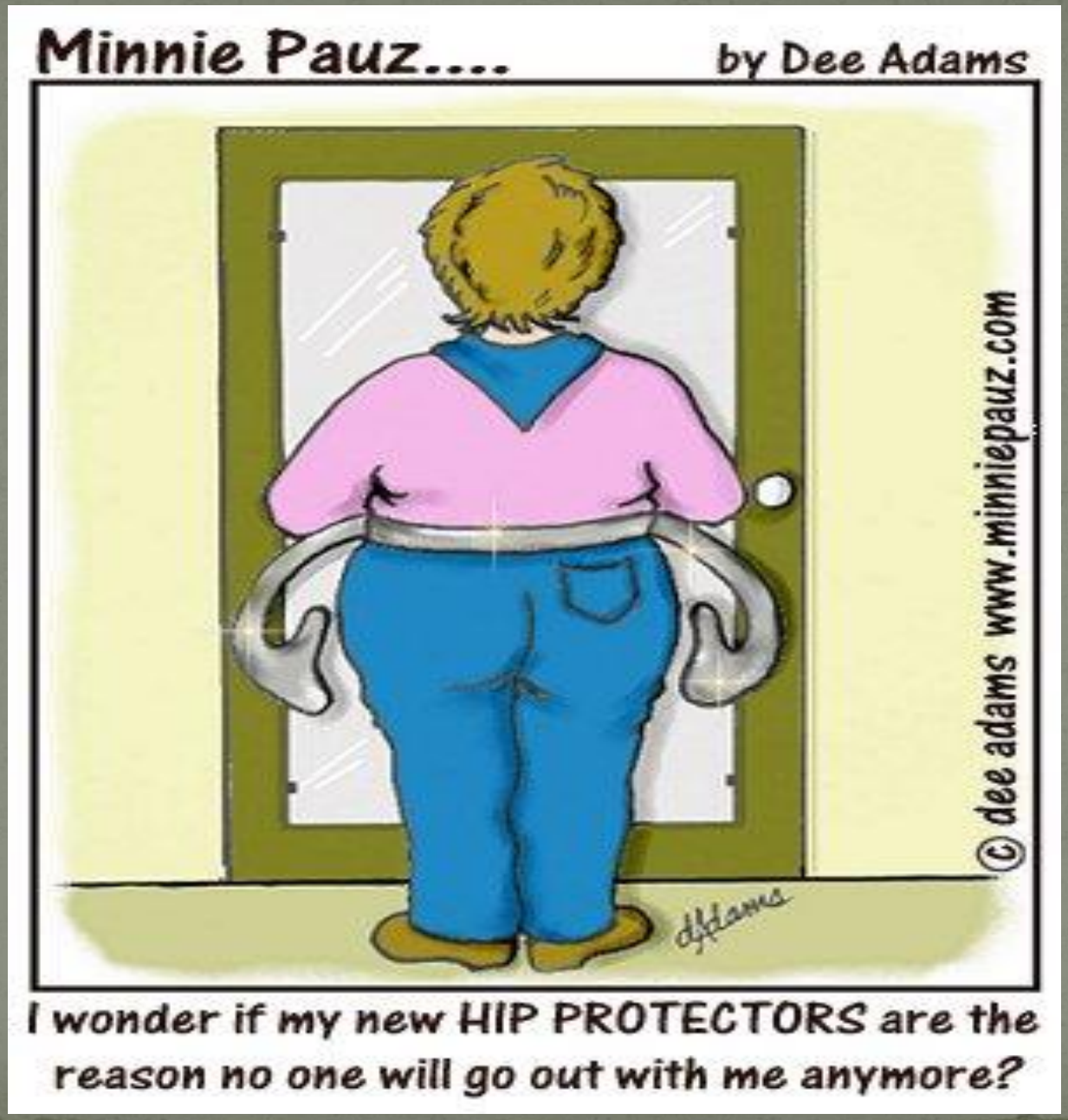
- Use nightlights throughout your home
- Keep all rooms free from clutter, especially the floors
- Keep floor surfaces smooth but not slippery
- When entering rooms, be aware of differences in floor levels and thresholds.
- Wear supportive, low-heeled shoes even at home.
- Avoid walking around in socks, stockings, or floppy slippers.
- Check that all carpets and area rugs have skid-proof backing or are tacked to the floor, including carpeting on stairs.
- Keep electrical cords and telephone lines out of walkways.

Indoor safety checklist

- Be sure that all stairways are well lit and that stairs have handrails on both sides. Consider placing fluorescent tape on the edges of top and bottom steps
- Install grab bars on bathroom walls beside tubs, showers, and toilets. If you are unstable on your feet, consider using a plastic chair with a back and nonskid leg tips in the shower
- Use a rubber bathmat in the shower or tub.
- Keep a flashlight with extra batteries beside your bed.
- Add ceiling fixtures to rooms lit only by lamps, or install lamps that can be turned on by a switch near the entrance to the room
- Use at least 100-watt light bulbs in your home

Outdoor safety checklist

- In bad weather, consider using a cane or walker for extra stability
- In winter, wear warm boots with rubber soles for added traction
- Look carefully at floor surfaces in public buildings. Many floors are made of highly polished marble or tile that can be very slippery
- When floors have plastic or carpet runners in place, try to stay on them whenever possible
- Use a shoulder bag, fanny pack, or backpack to leave hands free
- Stop at curbs to check height before stepping up or down. Be cautious at curbs that have been cut away to allow access for bikes or wheelchairs. The incline may lead to a fall


Minnie Pauz....
by Dee Adams
© dee adams www.minniepauz.com
I wonder if my new HIP PROTECTORS are the reason no one will go out with me anymore?

Quality of Life and Safety of Tai Chi and Green Tea Extracts

- Based on the study findings, the researchers concluded that green tea polyphenols at a dose of 500 mg daily for 24 weeks, alone or in combination with tai chi, appears to be safe in postmenopausal women with low bone mineral density

- Practicing tai chi and/or taking green tea polyphenols appears to be safe
- Practicing tai chi by itself or in combination with green tea polyphenol supplements may improve quality of life; however, taking green tea supplements by themselves has no significant improvement in quality of life

"Your Thai- chi- chicken Sir."

Turmeric May Have Bone-Protective Effects

- Curcuminoid-enriched turmeric extract prevented up to 50 percent of bone loss, and also preserved bone structure and connectivity
- Researchers concluded that turmeric may protect bones, but that the effect depends on the amount of curcuminoids present
- Turmeric may offer a safer alternative to menopausal hormone therapy or botanical phytoestrogens (compounds similar to the female hormone estrogen) for bone preservation in menopause

Journal of Agricultural and Food Chemistry
http://nccam.nih.gov/research/results/spotlight/093010.htm

Omega 3FAs and Bone Mineral Density/Fracture

- Among five studies described in four reports the effect of omega-3 fatty acids on bone mineral density was variable, No studies that assessed the effect of omega-3 fatty acids on fracture were identified

- For rheumatoid arthritis, the available evidence suggests that omega-3 fatty acids reduce tender joint counts and may reduce requirements for corticosteroids, and help reduce osteoporosis indirectly

http://www.ahrq.gov/clinic/epcsums/o3lipidsum.htm

Black Cohosh Promotes Bone Formation in Mouse Cells

- Study suggest that black cohosh may have potential implications for the prevention or treatment of postmenopausal bone loss, there is no evidence yet that this laboratory research can be extended to treatments in people

- Results provide a scientific explanation at the molecular level for claims that black cohosh may protect against postmenopausal osteoporosis

- They also noted that studying extraction methods and identifying black cohosh's active components may make it possible to develop new ways to prevent and treat this condition.

journal *Bone* http://nccam.nih.gov/research/results/spotlight/090408.htm

Questions

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