

Overview of Osteoporosis



Sherwin Criseno

Advanced Nurse Practitioner/Lead Nurse
Endocrinology

Definition

Osteoporosis is a condition that weakens bones, making them fragile and more likely to break. It develops slowly over several years and is often only diagnosed when a minor fall or sudden impact causes a bone fracture.

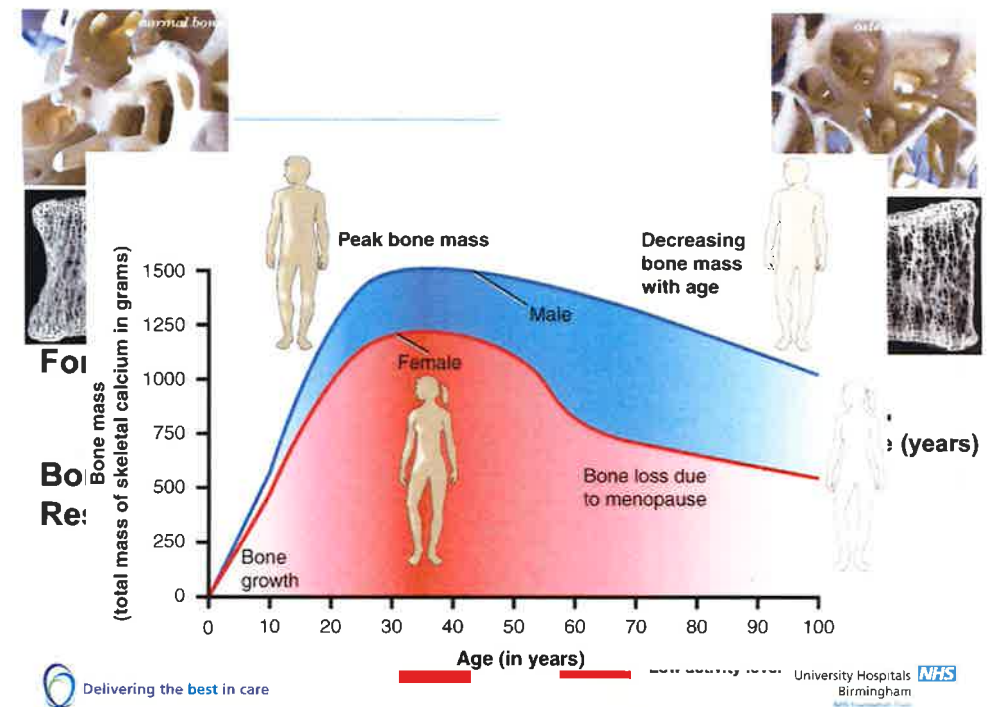
NOS and NHS, UK

Osteoporosis means 'porous bone'. It is a disease that occurs when the body loses too much bone, makes too little bone, or both. As a result, bones become weak and may break from a fall or, in serious cases, from sneezing or minor bumps.

National Osteoporosis Foundation

What Is Osteoporosis?

- A. Thin bones
- B. Achy bones
- C. Brittle bones
- D. Weak/Fragile bones
- E. Porous bone



What Are Symptoms Of Osteoporosis?

- A. Weak bones
- B. Achy bones
- C. Achy/painful joints
- D. Weak muscles
- E. Achy/painful muscles

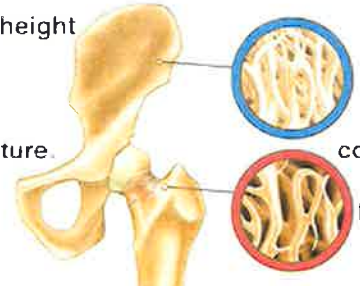
What Are Symptoms Of Osteoporosis?

Osteoporosis has NO symptoms. It doesn't cause pain, swelling or muscle weakness.

Most people with osteoporosis do not know that they have the condition until they break a bone or are diagnosed with osteoporosis

Signs of Osteoporosis

THE MOST COMMON SIGNS OF OSTEOPOROSIS:

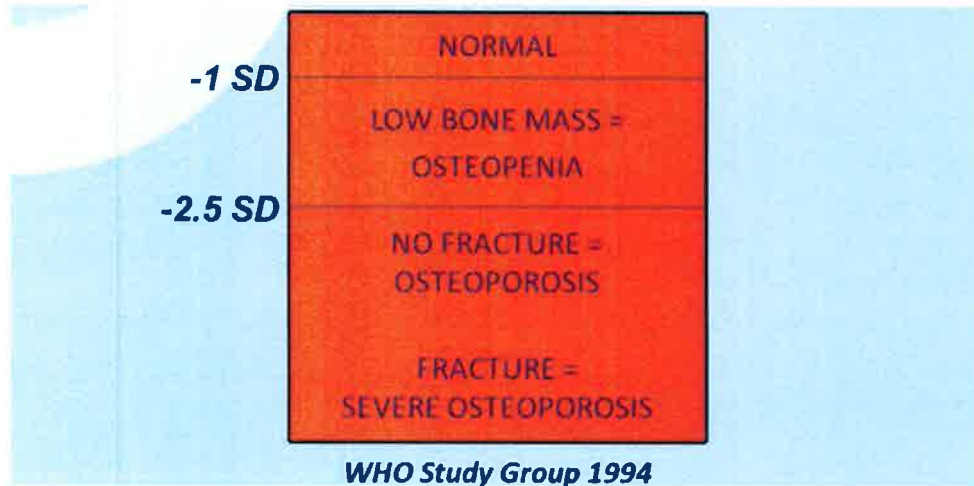
- 1 Decrease in height over time.
 - 2 Hunched or stooped posture.
 - 3 Back pain, especially lower back pain, secondary to a collapsed vertebra.
 - 4 Easier than usual bone fracturing.
- 

How Do We Diagnose Osteoporosis?



Bone density scanning of hip and spine:
dual energy X-ray absorptiometry (DXA)

Diagnosing Osteoporosis



for a breakfree future

Can Osteoporosis Be Diagnosed Without a DXA Scan?

YES.

Fragility Fracture

Fragility fractures are fractures that result from mechanical forces that would not ordinarily result in fracture, known as low-level (or 'low energy') trauma. WHO

What Is a Fracture?

INCOMPLETE FRACTURE

The bone cracked but does not completely break into pieces



COMPLETE FRACTURE

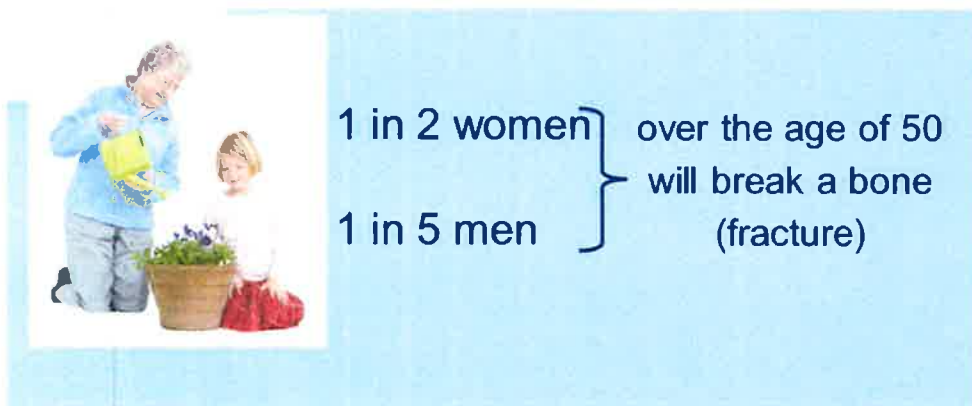
The bone breaks into two or more pieces.



Who Are At Risk?



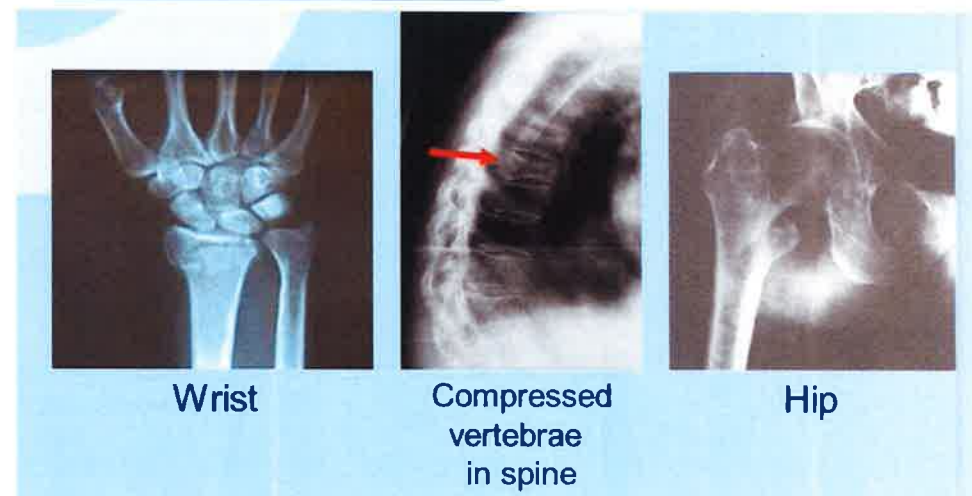
Osteoporosis



for a breakfree future



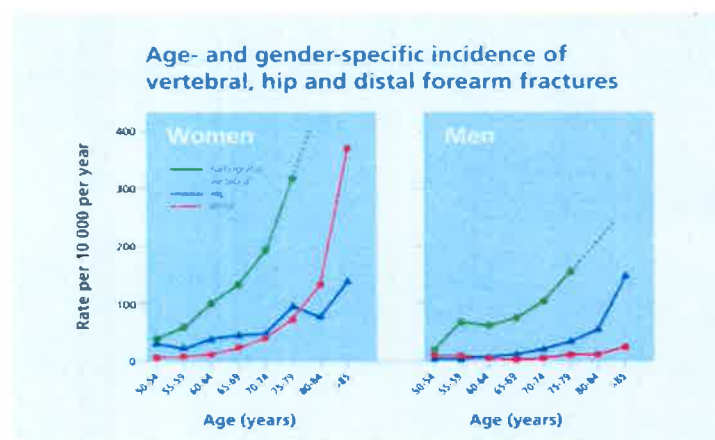
Where Do Osteoporotic Fracture Occur?



for a breakfree future

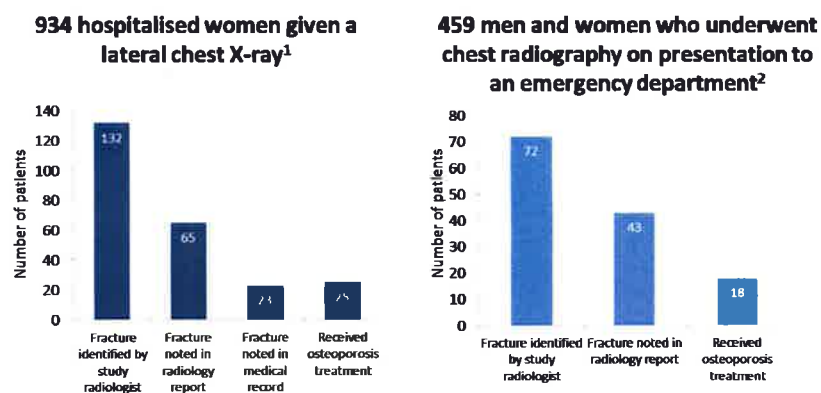


Incidence of Fractures



Age-specific and sex-specific incidence of radiographic vertebral, hip and distal forearm fractures. (Sambrook et al. Lancet 2006;367:2010-8)

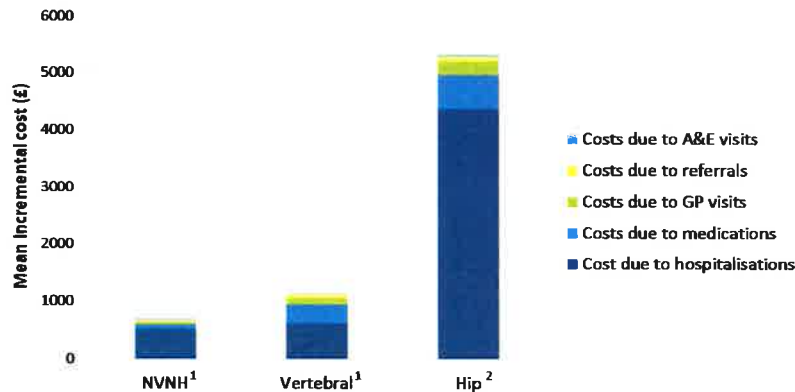
Osteoporosis: Is It Accurately Diagnosed?



1. Gehlbach SH et al. Osteoporos Int 2000;11:577-582
2. Majumdar SR et al. Arch Intern Med 2005;165:905-909

Cost of Osteoporotic Fractures

Overall incremental cost of fracture by health care resource component in postmenopausal women with a fracture over women in the matched non-fracture controls



Vertebral fractures included women with recorded clinical or morphometric fractures. NVNH fracture = fractures of the clavicle, arm, humerus, elbow, wrist/forearm (radius, ulna), pelvis, and leg (distal femur, tibia, and/or fibula)

1. Gutierrez L Bone 2012;51:324-331 2. Gutierrez L et al J Med Econ 2011;14:99-107

© Eli Lilly and Company 2015

NVNH = non-vertebral non-hip fracture

Impact of Osteoporotic Fracture

Every year in the UK:

- **300,000** osteoporotic fractures
- **Over £2.3 billion** per year on hospital and social care costs for hip fracture alone (approx. **£6 million/day**)

Fractures in over 60 y/o account for >2M hospital bed days in England

(More than those attributed to diabetes, ischaemic heart disease, breast and prostate cancer)



Delivering the best in care

University Hospitals Birmingham NHS Foundation Trust

Effects of Fragility Fractures



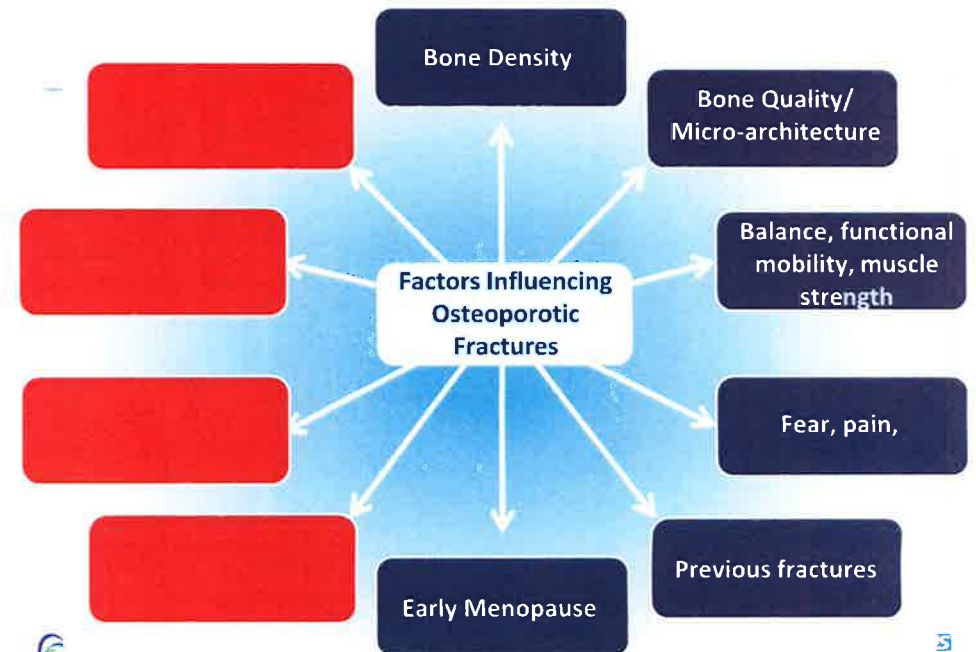
BMC Musculoskeletal Disorders

Health-related quality of life after vertebral or hip fracture: a seven-year follow-up study

Jorge Hallberg, Margareta Bachrach-Lindstam, Sofia Hammarby, Caron Fox, and Anna Lindberg

Results: Sixty-seven women participated. In the 42 women (mean age 75.8, SD 4.7) with vertebral fracture as inclusion fracture, bodily pain had deteriorated between two and seven years and might be explained by new fracture. Remaining pronounced reduction of HRQOL was seen in all domains except general health and mental health at seven-year follow-up in women with vertebral fractures compared to the reference group ($p < 0.05$). All 25 women (mean age 75.0, SD 4.7) with hip fracture as inclusion fracture had no significant changes in HRQOL between two and seven years and did not differ from the reference group regarding HRQOL after seven years. The vertebral group had significantly lower values for bodily pain, vitality, role-emotional function and mental health compared to the hip group. HRQOL showed a positive relationship between physical activity, static balance and handgrip strength.

Conclusion: The long-term reduction of HRQOL in women with vertebral fracture emerged clearly in this study. The relationships between HRQOL and physical performance in women with vertebral and hip fracture raise questions for more research.



Osteoporosis Treatment



1. Calcium and/or Vitamin D
2. Lifestyle improvement (Alcohol, smoking, exercise)
3. Medications
 - a. Oral Medications
 - b. Parenteral Medication

Dietary Reference Intake

TABLE: Dietary Reference Intakes for Calcium and Vitamin D

Life Stage Group	Calcium			Vitamin D		
	Estimated Average Requirement (mg/day)	Recommended Dietary Allowance (mg/day)	Upper Level intake (mg/day)	Estimated Average Requirement (IU/day)	Recommended Dietary Allowance (IU/day)	Upper Level Intake (IU/day)
51-70 year old males	800		2,000	400		4,000
51-70 year old females	1,000		2,000	400		4,000
>70 years old	1,000		2,000	400		4,000

Raw Milk 1 cup: 300 mg 	Broccoli 1 ½ cup cooked: 93 mg 
Yogurt or Kefir 6 oz: 300 mg 	Okra 1 cup: 82 mg 
Kale(cooked) 1 cup: 245 mg 	Almonds 1 oz: 76 mg 
Cheese 1 oz: 224 mg 	Bok Choy 1 cup: 74 mg 
Sardines 2 ounces: 217 mg 	Watercress 1 cup: 41 mg 

Dietary Reference Intake (Calcium)

Product	Servings Per Day	Calcium (mg)	Total
Milk (8 oz.)		X 300	=
Yogurt (6 oz.)		X 300	=
Cheese (1 oz. or 1 cubic inch)		X 200	=
Fortified Foods & Juices		X 80 - 1,000	=
Estimated total from other foods Note: Increase this amount if you get more than 250 mg of calcium from other foods.			= 250
Total Daily Calcium Intake, in mg			=

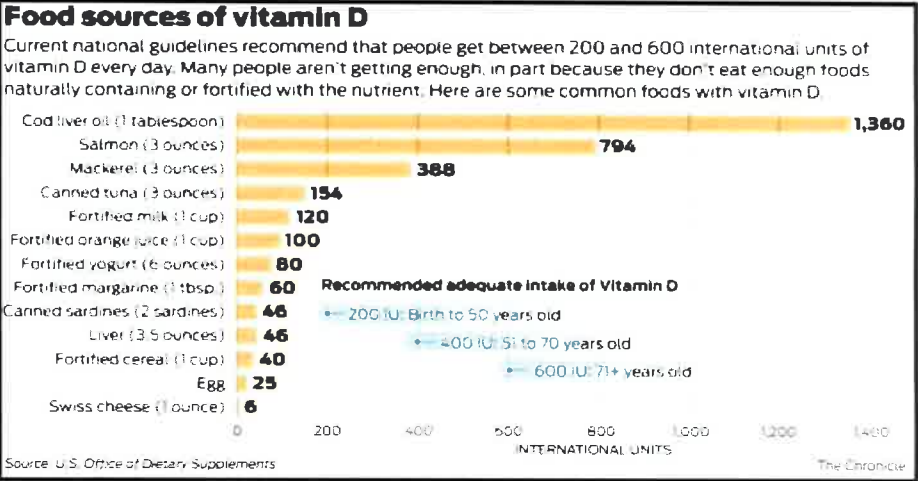
Calcium Calculator

Foodstuff	Per Week	mg/serving
Cups of tea or coffee with milk	0	45
Milk or milk drinks (e.g. hot chocolate)	0	250
Cereal or porridge with milk	0	155
Milk puddings (custard, ice cream, yogurt etc.)	0	100
Chocolate bars	0	110
Slices of bread	0	30
Portions of cheese	0	320
Servings Lasagne, macaroni cheese, mousaka, pizza	0	225
Portions of cottage cheese	0	50
Eggs	0	37
Biscuits	0	30
Portions of Cake	0	50
Portions of green vegetable	0	40
Portions of sardines / pilchards	0	350
Portions of other fish	0	50
Oranges	0	75

3 Main Sources of Vitamin D



Dietary Sources of Vitamin D



home lifestyle health & fitness love & sex family women home & garden food

Nutrition

Britain not sunny enough for healthy vitamin D levels, say experts

Intake should be boosted with supplements, say official health advisors in draft recommendations that could lead to new guidance

Press Association

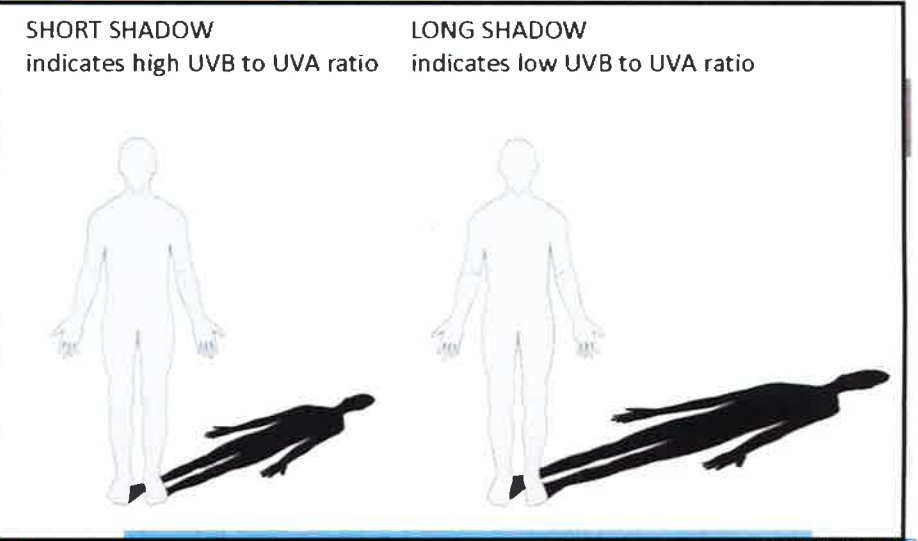
Monday 2 August 2015 18:47 BST

Facebook Twitter Messenger LinkedIn Email

Save for later

A person is walking away from the camera on a dirt path that leads towards a calm lake. The sky is overcast with grey clouds. In the foreground, a wooden signpost is visible with the text 'Please keep dogs on a lead. Thank you.' The surrounding landscape is grassy and hilly.

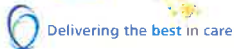
Sunshine Calendar



Vitamin D Supplementation

Examples of vitamin D3 food supplements prescribed in the UK

Hux D3
Pro D3
Valupak Vit D3
Bio-vitamin D3
Osteocaps D3
Aciferol
Solgar
Sunvit D3



Examples of vitamin D3 medicines available in the UK

InVita D3 (colecalciferol)
Desunin (colecalciferol)
Fultium-D3 (colecalciferol)
Plenachol (colecalciferol)
Aviticol (colecalciferol)
Stexerol (colecalciferol)



Fruits, Vegetables and Protein

Not Eating Enough Fruits and Vegetables. Eating a well-balanced diet, rich in fruits and vegetables, is important for healthy bones. In addition to calcium and vitamin D, magnesium, potassium and vitamin K are a few of the many minerals and vitamins that are important for bone health.

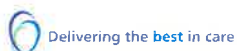
Getting Too Much Protein, Sodium and Caffeine. Diets that are extremely high in non-dairy sources of animal protein, sodium and caffeine may cause the body to lose calcium. Eating enough protein, however, is important for bone health. Bone loss may occur in people who eat special "high protein" diets.



Exercise

Weight-bearing exercise

30 min/day (5x week)



National Osteoporosis Society

Exercise and osteoporosis

How exercise can help with bone health, fragile bones and fractures

Weight-bearing exercise: any exercise in which you are supporting your own body weight through your feet and legs (or hands and arms).

Birmingham

Alcohol

General recommendation: 14 units a week

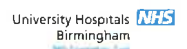
People at risk of fracture: no more than 3 units a day

What does 1 unit of alcohol look like?



You shouldn't regularly exceed **14 UNITS** per week

drinkaware



Smoking



Key Points

1. About 1.5M men and 7.5M women have osteoporosis.
2. People with osteoporosis cannot feel their bones getting weaker, and many people do not know they have osteoporosis until they break a bone.
3. Osteoporosis and the broken bones it causes can be prevented.
4. Some people are more at risk of developing osteoporosis (very old, family history, under-weight, smoker, steroid use).
5. You need to get enough calcium, vitamin D and exercise to keep your bones healthy.
6. If you smoke, the only way to protect your bones is to STOP.
7. You are never too young or too old to protect your bones. ACT NOW!

Any Questions?

