

## **Osteoporosis: The Risks and Treatments**

According to the National Osteoporosis Foundation (NOF), it is estimated that 10 million Americans (80% of them women) have osteoporosis (severe bone loss with a high risk for bone fracture) and an additional 18 million have osteopenia (moderate bone loss). Once men reach age 65-70 bone mass loss occurs at the same rate as women, and 1/3 of all hip fractures each year occur in men. Bone is a dynamic tissue and is constantly being removed (reabsorbed) by cells called 'osteoclasts', while cells called 'osteoblasts' are forming new bone. After age 30, bone re-absorption gradually starts to exceed bone formation leading to a lower bone density. By the time women are in their 80's, 50% will have osteoporosis in one or both hips. Vertebral fractures lead to chronic pain, disability and height loss. Hip fractures are associated with increased risk of hospitalization and death.

### **Risk factors for Osteoporosis Include:**

- Age (50 yrs and over)
- Cigarette smoking
- Low body weight
- Personal history of bone fracture
- Family history of osteoporosis or hip fracture
- Caucasian or Asian heritage
- Long-term (>6 months) steroid therapy (severe asthma or arthritis)
- Menopause with estrogen deficiency
- Alcoholism / Drug use
- Inadequate physical activity
- Malabsorption disorders (IBS, eating disorders, stomach stapling)
- Inadequate calcium intake

### **Determination of Bone Density:**

Bone mineral density ('BMD') is measured by a precise, accurate and extremely low radiation machine called a **DEXA** (dual-energy x-ray absorptiometry). When the BMD is measured, it is compared to a healthy young adult of the same sex and is reported as a "T-score". If the T-Score is 10% to 25% below the average for a healthy young adult, osteopenia is present.

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|--------------------------|--------------|--------------------------------------|
| <input type="checkbox"/> | Normal       | T-score is above 0 to – 1.00         |
| <input type="checkbox"/> | Osteopenia   | T-score is between –1. 00 and – 2.50 |
| <input type="checkbox"/> | Osteoporosis | T-score is lower than – 2.50         |

### **Preventive and Treatment Measures:**

- Calcium: 1200-1500 mg/day through diet and/or supplements. Our bodies can absorb 500-600 mg at one time; therefore, calcium needs to be taken 2 times a day.
  - Calcium Carbonate should be taken with food
  - Calcium Citrate and Calcium Phosphate can be taken at any time of the day.
- Vitamin D: 400-800 IU/day
  - Vitamin D increases the absorption of calcium into the bone.
  - Vitamin D and Calcium do not need to be taken together.

- Weight bearing exercise: Weight bearing means exercise in which bones and muscles work against gravity as the feet and legs bear the body's weight. This may include walking, jogging, stair climbing, dancing and tennis. Weight lifting improves muscle mass and bone density.
- Avoid smoking, excessive alcohol intake, carbonated drinks, and excessive caffeine intake.

### **Medical Treatment of Osteopenia and Osteoporosis:**

#### **Drug therapy is indicated for T-scores < -1.5.**

- 1) **Estrogen therapy** is considered to be preventive by reducing postmenopausal bone loss and decreasing the risk of vertebral (spine) fractures. The potential risks of taking estrogen may include blood clots. Long term Estrogen replacement (over 10 years) has not demonstrated an increased risk of breast cancer. Data supports beneficial cardiovascular effects of estrogen replacement when started early in menopause.
- 2) **SERMS** –Selective Estrogen Receptor Modulators (i.e. Raloxifene or “**Evista**”) is used to prevent and treat bone loss. Evista reduces the risk of spinal fractures by 35-60%. There may be a cardiovascular benefit as cholesterol levels may be improved. SERMS do not increase the risk of breast or uterine cancer, nor do they cause breast tenderness or uterine bleeding. Possible side effects include hot flashes, leg cramps and rarely, venous blood clots.
- 3) **Bisphosphonates:** Bisphosphonates are used to treat bone loss by inhibiting bone breakdown and therefore increasing bone density.
  - Fosamax (Alendronate)-Daily or weekly
  - Actonel (Risedronate)-weekly or monthly
  - Boniva (Ibandronate)-monthly or intravenously every 3 months
  - Reclast (Zoledronic Acid)- yearly intravenously

A common side effect of this class of drug is irritation of esophagus.

Rare cases of Osteonecrosis (destruction of bone tissue) of the jaw have been reported in patients undergoing extensive dental work while taking a bisphosphonate. As a precaution, we recommend discontinuing the medication one month prior to a tooth extraction, implant or root canal. The medication may be resumed one month after the procedure.

### **References:**

- National Osteoporosis Foundation <http://www.nof.org>
- Osteoporosis and Related Bone Disease, National Resource Center <http://www.osteoporosis.org>
- U.S. Dept. of Agriculture (USDA) Food and Nutrition Information Center <http://www.nal.usda.gov/fnic>

