



Osteoporosis Alternatives

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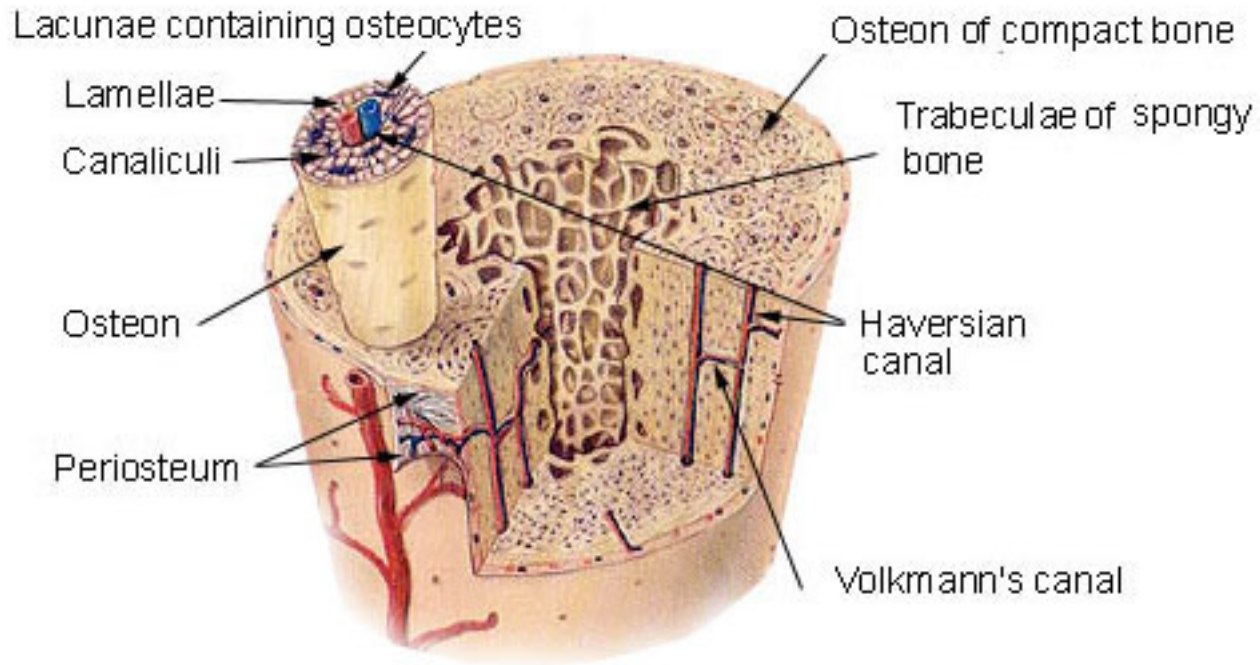
Osteoporosis

- According to World Health Organization, osteoporosis is globally the 2nd biggest health problem (after Cardiovascular disease).
- Leads to 1.5 million fractures per year.
- Greater than 50% of healthy American women aged 30-40 are likely to develop vertebral fractures as they age, due to osteoporosis.
 - Endocrinology Assessments: Bone Resorption Assessments. © GDX 2007.



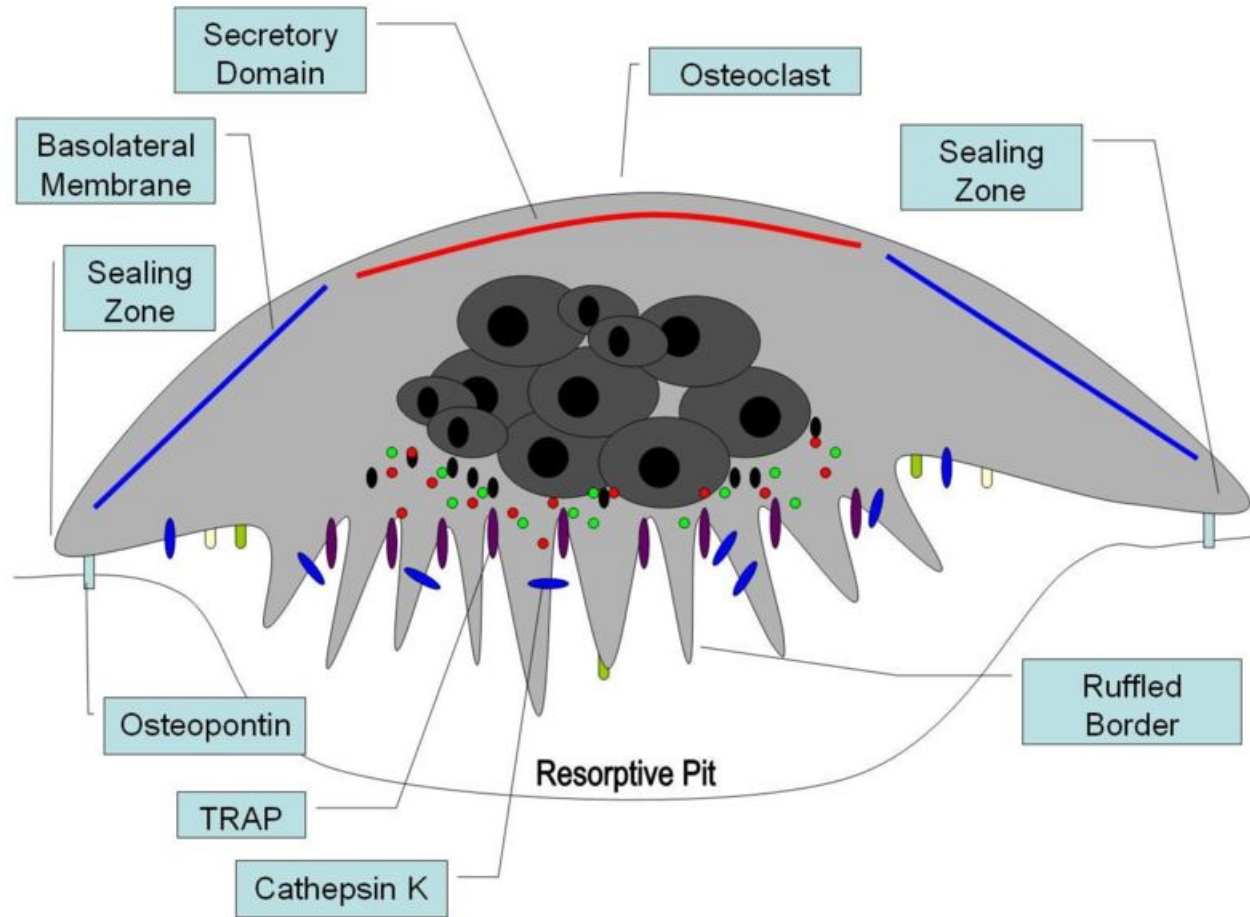
Bone Structure

Compact Bone & Spongy (Cancellous Bone)





Bone Resorption





Risks and Prevention

- Genetic Predisposition
- Diet
- Exercise
- Nutritional Supplementation
- Decline in hormones
- at menopause





Prevention and Treatment

- Difficult to treat once progressive bone weakening begins.
- Early identification of accelerated bone loss critical.
- Prevention best means to treat, rather than reversal of bone loss.



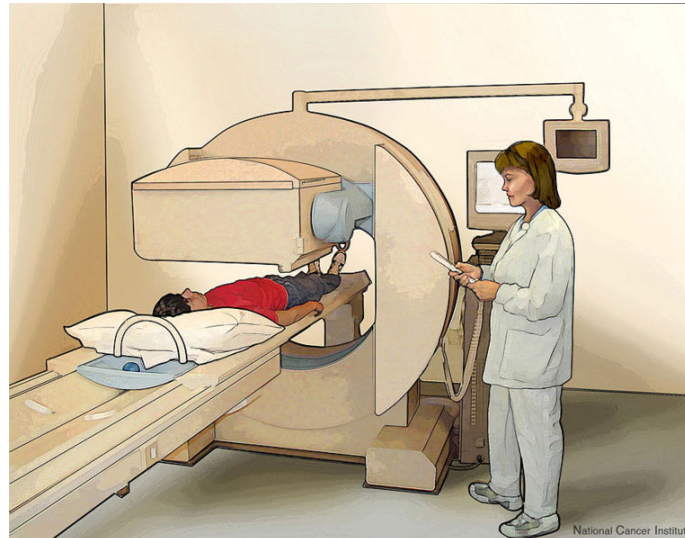
Testing

- **BMD** (Bone Mineral Density; DEXA) tells the current density.
- **Urinary BRA** (Bone Resorption Assay) tells whether you are currently building or losing bone.
- **OsteoGenomics** Profile tells whether you have specific genetic defects contributing to bone loss.
 - Bisphosphonates can cause osteonecrosis of the jaw after bad teeth extracted. J Oral Maxillofac Surg 2004;62:527-34.



Static Markers

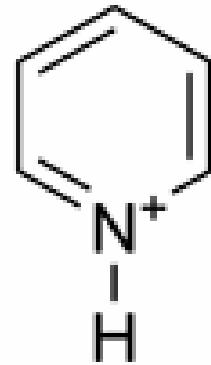
- Photon Absorbiometry (bone scans)
 - Diagnose, report amount of bone loss.
 - No info on rate of bone resorption.
 - Inconvenient to monitor therapies (invasive, expensive).





Biochemical Markers

- Measures bone turnover.
- Immediate information on rate of bone loss.
- Can predict future losses.
- Convenient.
- Inexpensive.



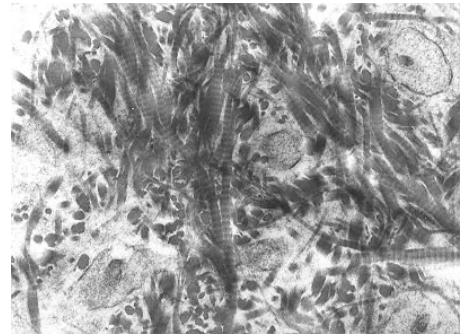


Urinary Pyridinium Crosslinks



Pyridium Crosslinks

- Stabilizers of collagen molecules.
- Bone collagen contains:
 - Pyridinoline (PYD) and Deoxypyridinoline (DPD).
- Release of these crosslinks in urine from bone reveals bone degradation.
- Found to be most accurate and least subject to interference.
- Higher than normal amounts in urine indicate rapid rate of bone loss.





This test reveals important information about:

- Bone turnover rate
 - Can indicate a need for preventative and early treatment strategies to help avoid development of osteoporosis and disabling fractures.
- Effectiveness of interventions,
 - Based on post treatment changes in biochemical markers.
- Possible need for further evaluation of other bone-loss related conditions
 - Paget's disease, connective tissue disease, osteomalacia, and arthritis.

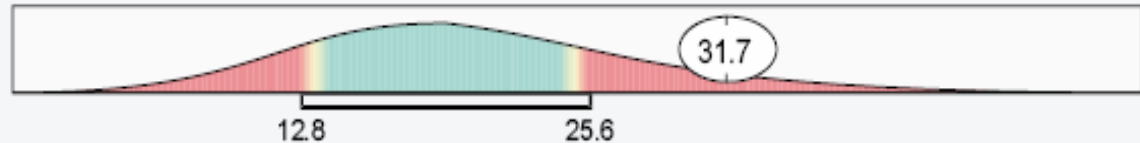


SAMPLE REPORT

Chemistry Parameters

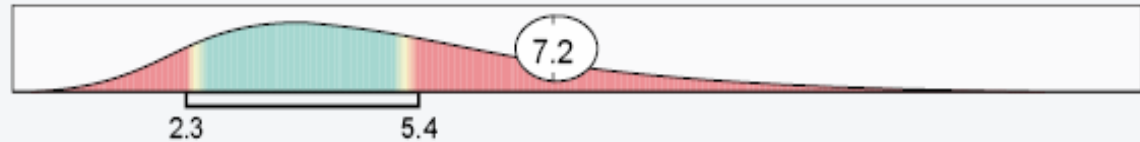
Pyridinium Crosslinks/Creatinine

Ref Range
nmol/mmol



Deoxypyridinoline/Creatinine

Ref Range
nmol/mmol



Pyridium crosslinks consist of both pyridinoline and deoxypyridinoline. Deoxypyridinoline is found predominantly in bone tissue, whereas pyridinoline is found in both bone and cartilage. Pyridinium crosslinks are released when bone is broken down (or resorbed). While not diagnostic of osteoporosis, these markers may be used to monitor bone resorption status and therefore are a useful gauge of treatment efficacy.



Prevention



Diet

- Adequate protein
- Healthy fats
- Lots of vegetables
- High fiber
- Lots of garlic, onions, and fish.
- Vinegars help absorb minerals.





Diet

- **Completely avoid sodas and non-fermented soy.**
- Low in refined/starchy Carbohydrates.
 - Reduce bread, rice, pasta, and white potatoes.
- With no added sugar, caffeine, or alcohol.





Exercise

- Especially walking
- Rebounding
- Weight-training
- Aqua-aerobics
- Yoga
- Pilates
- NIA
- What works for you.





Calcium

- 500-1000 mg per day by diet and supplements
 - *American Journal of Clinical Nutrition* 1995;62:417-25
 - *Journal of Nutrition* July 1994;124:1060-64.
- **Ca-citrate** is absorbed 2 ½ times better than carbonate.



Magnesium

- 500-1000 mg per day.
- The amount of magnesium should be equal to, or greater than, the amount of calcium each day.



Vitamin D

- 1000-5000 IU per day.
- Recent research supports higher dosages as safe and necessary.
- Check 25-hydroxy-Vit D levels.
 - *Challenges of Modern Medicine* 1995;7:223-27
 - *Journal of Clinical Endocrinology and Metabolism* 1995;80(4):1051
 - *Mayo Clinic Proc* 2003;78:1463-70, 1457-59.



Vitamin K-1

- Phytonadione
- 5 drops (10 mg) twice daily under the tongue
 - *Bone* Feb. 1995;16-2:179-84
 - *Journal of Bone Mineral Resorption* 2000;15-3:515-521.
- Vitamin K is also in dark green leafy vegetables.



Trace Minerals

- Measure levels, then e.g. “OsteoPrime” (2 capsules, twice daily) or equivalent:
 - **Zinc** 20-30 mg daily
 - *Journal of Nutrition* July 1994;124:1060-64.
 - **Copper** 2 mg daily
 - *Journal of Nutrition* July 1994;124:1060-64.
 - **Manganese** 20 mg daily
 - *Journal of Nutrition* July 1994;124:1060-64.
 - **Boron** 2 - 3 mg daily
 - *American Journal of Clinical Nutrition* 1995;61:341-45.
 - **Silicon** 1-2 mg daily.



More Supplementation

- **Strontium** 227 mg, 1 – 3 capsules daily.
- **Vitamin C** 500-1000 mg twice daily
 - *ACTA Paediatrica* 1995;84:388-92.





Essential fatty acids

- Cod Liver Oil or Fish Oil, 1-2 Tbsp daily for omega-3 fatty acids.
- Primrose oil or borage oil for omega-6 **GLAs**
 - *Nutrition* 2000;16:386-390.
- Ground flax seeds, not oil.





Hormones

- **Estrogen** and **Progesterone** replacement therapy with Bioidentical and balanced hormones.
- **Testosterone** if indicated (for women after surgery or with weak adrenals).
- **DHEA** as directed. Do not exceed 10-25 mg/day in females without physician supervision.



Go Further

- **Treat lead and / or mercury toxicity**
 - *American Journal of Epidemiology*
1995;141(11):1047-58.
- **Stop smoking**
 - *Journal of Bone and Mineral Research*
1994;9(9):1339-45.
- **Nettle tea**
 - Provides many minerals.