

Georgia Hormones P.C.

Robert P. Goldman, MD

3400-A Old Milton Pkwy, Suite 360, Alpharetta GA 30005 770-475-0077

www.GeorgiaHormones.com

version 2008-05-26

BONE HEALTH for Women & Men

Introduction: To start, I want to bring some rationality and reality to this whole issue. Broken hips are a significant problem for the very old. Elderly nursing home residents who break their hips frequently die within a year, but it is the most debilitated that are also the most susceptible to the problem. **The median age for a fractured hip in the United States is 84.** It is not a problem of the newly menopausal woman in her 50s. It is a problem especially for the **very old women and men** who are unstable and frequently fall down, who eat poorly, are losing weight, and are in general decline. The solution involves a Holistic approach to health and aging. **There are no long term studies to show that any pharmaceutical given in the 50s has benefit in the 80s.** There are studies to show that the benefit of pharmaceuticals disappears a few years after stopping the drug. This is why drug companies study **Bone Mineral Density (BMD)** instead of fractures. The fracture rate of women, even in their 60s, is very low, and it is almost impossible to show that the drugs would have an actual health benefit. Let's take a look at how our bones keep themselves healthy and how we can help them.

Normal Bone Health:

Development: As we grow, our bones get bigger and stronger, peaking at around age 30. After that, we all slowly decline, our bones get slowly thinner. Bones are formed from a protein matrix, made strong by a **Calcium and Phosphate** matrix that is built onto the protein matrix. The spine is mostly straight up and down and has to withstand compression forces. The hip bones are at an angle and also must be able to withstand forces of twisting and bending. At the hips, Protein for flexible strength is as important as Calcium for compression strength.

Wear and Tear and Repair: Just living and doing causes tiny microscopic breaks in our bones. Walking, exercise or bearing weight causes these tiny, microscopic breaks to occur. Bone cells called **Osteoclasts** go in, and take away a little bone around the break. Other cells called **Osteoblasts** then follow and repair the damage. **Estrogen** slows the rate at which the Osteoclasts take away bone. **Progesterone and Testosterone** stimulate the Osteoblasts to make the repair. Healthy bones require both so that tiny cracks can be repaired. Women in their 40s frequently lose their Progesterone because they are no longer ovulating very often. Their men are still making Testosterone, but that too is slowly declining. So, repairs are not made as well as in youth, and bone strength declines; more so in women than men of the same age. With **Menopause**, estrogen is lost also. Without the inhibition of Estrogen, the Osteoclasts start taking bone away faster and bone loss accelerates. Having thin bones with significant reduction of the mineral Calcium is called **Osteoporosis** meaning "Bones with Holes". This can be tested by a special X-ray called a **DXA Scan**, which measures **BMD** (Bone Mineral Density). A lesser loss of bone compared to an average 30 year old is called **Osteopenia** or "smaller bones".

Stress: When we are under stress, our Adrenal glands produce higher amounts of a hormone called **Cortisol**. Cortisol does many things, affecting the thyroid, sex hormones, the immune system, fat storage, brain function and **Bones**. Cortisol hits the same Osteoblast bone receptors that are stimulated by Progesterone and Testosterone, but it blocks their effect, so **bones are not repaired well**. This can increase the trend toward Osteoporosis. People who take Cortisone drugs for long periods of time can also get Osteoporosis.

Aging Effects: As we age after 30, we are all slowly losing bone. What makes a little old man and little old woman, is shrinkage of the spine and increasing curve of the spine. The World Health Organization (**WHO**) defines Osteoporosis as a **BMD of less than T-2.5**; Osteopenia as BMD of T-1.0 to T-2.5. By that definition, 13% - 18% of white American women aged 50 or older have Osteoporosis of the hip. **Osteoporosis is defined by a low BMD; however, most post-menopausal women with fractures do not have bone density values consistent with osteoporosis based on WHO criteria.** Again, **the biggest danger for broken hips is falling down in very old age.** The median age for hip fracture is **82**. Those numbers will probably get later and later as the population is healthier in old age and lives longer. These numbers are for current women in their 80s. The current 50 year olds are much healthier than their parents were at 50,

much more active, eat healthier and have better teeth to continue their better nutrition. I expect the median age for hip fracture to continue to get older.

Risk Factors for Osteoporotic Fracture: **The biggest risk is advanced age**, followed by: Low BMD, previous fracture as an adult, a parent with a hip fracture, extreme thinness, current smoking, low calcium or vitamin D intake, more than two alcoholic drinks per day, long treatment with Cortisone drugs, and increased risk of falling due to: impaired vision, dementia, poor health or frailty, low physical activity or a history of recent falls. **Most of these risk factors relate to mental and physical decline of the very elderly.** Weight loss frequently becomes a problem at the end of life because of an inability to eat and process needed nutrition.

Maintenance: The key to a life of healthy bones is a healthy life style: A **balanced diet** strong on vegetables with modest fat and protein intake, an active life style with **regular exercise** including aerobic and weight bearing exercise to help maintain balance and muscle tone, **no smoking or heavy drinking**. Also needed is a good nutritional supplement program including a **basic multivitamin and mineral formula** including at least **1000 IU of Vitamin D**, although up to 4,000 IU might be better. **500 to 1000 mg of Calcium** plus about half that amount of **Magnesium** is also needed, which can be purchased together in a single tablet. Both adequate vitamin D levels and stomach acid are needed for the body to absorb calcium. **Medications that stop stomach acid like Nexium and Prilosec prevent calcium from being absorbed.** Since bone is built during sleep and magnesium is a sedative, it is good to take the Calcium/Magnesium before bed. I also recommend extra **vitamin C 500 – 1000 mg** and a capsule of **Fish oil or flax seed oil**.

HRT: As stated above, the natural hormones protect our bones. **Estrogen** slows the rate that the Osteoclasts remove bone. **Progesterone and Testosterone** stimulate the Osteoblasts to do repairs and build new bone. Many studies show that Hormone Replacement Therapy in menopause slows bone loss and reduces fracture rates. Once the HRT is stopped, however, significant bone loss occurs again. In men, Testosterone is turned into Estrogen. **Men also need to have some Estrogen to protect their bones.**

Pharmaceuticals: There are several categories of medications used for osteoporosis besides HRT. **Bisphosphonates (Fosamax, Actonel and Boniva)** work like a super estrogen to stop Osteoclasts from removing bone. Although they increase BMD, long term, their effectiveness on fractures is less clear. These drugs virtually halt all bone repairs and **there is some concern that, after more than a few years, bones may become more brittle, fracture more easily and heal more slowly.** There are very few studies lasting over five years. **SERM drugs like Raloxifene (Evista)** help bone in a way similar to estrogen. As an estrogen antagonist, though, they can make hot flashes worse, increase vaginal dryness. Evista can cause more blood clots than oral estrogen. **Parathyroid hormone and calcitonin** are natural hormones that stimulate bone growth. They require injections or nasal sprays, are very expensive and few long-term studies have been done. **No studies have compared these therapies to each other or Hormone Supplements for anti-fracture efficacy;** virtually all studies compare drugs to placebo.

The Pharmaceutical Dilemma: Although BMD measurement is only recommended for women over 65, many recently menopausal women in their late 40s and early 50s are getting bone DEXA scans done. If the BMD is a little low, many women are started on various medications. Even if a fracture were in these women's futures, it would not be expected to happen for 25-35 years. **There are no studies to show that taking these drugs in your 50s will be of any help in your 80s.** Although **natural hormone replacement** helps keep bones strong, that is not the only, or even the most important reason that most women are on the hormones. In addition, long-term use of **Bisphosphonates** possibly could actually make bones more brittle and more susceptible to hip fracture. **Those drugs are helpful in the very elderly woman who is too great a medical risk to begin taking estrogen, but we still don't have a good picture of what 30 years of their use might do.**

Currently, I recommend female HRT, male hormone supplements, healthy diet, vitamins, minerals and exercise as my bone protection plan.