



World's Largest Osteoporosis Congress Closes; Significant Studies Released

Toronto, Canada – June 6, 2006 [Press Release by the International Osteoporosis Foundation]

The largest world medical congress devoted specifically to osteoporosis ended in Toronto today, following five days in which nearly 4,000 participants from 98 countries learned of the latest research in this crippling bone disease and clinical strategies to treat patients more effectively.

Some highlights:

- Research on why astronauts lose significant muscle and bone mass while in space can lead to more effective techniques to reduce bone loss in bedridden patients. “We should think about the potential benefits of using space technology to prevent osteoporosis in our aging population,” noted Dr. Dave Williams, Canadian astronaut, who spoke at the congress.
- Nine women leaders from around the world called on individuals, physicians and government officials to stop the spread of osteoporosis. Justine Pasek, Miss Universe 2002 from Panama, one of the speakers at the event, said “it is time to get people to stand up and speak out on this serious disease.”
- A new, sophisticated X-ray scanner that can measure tiny, three-dimensional changes in bone architecture, was presented. This scanner can detect bone loss that may be missed by standard techniques.
- Rapid weight loss can be a risk factor for osteoporosis. Obesity is also a risk factor.
- Female nursing home residents have fewer skeletal fractures than women who live at home.
- Maternal vitamin D levels during pregnancy and infant bone growth influence future fracture risk. “Now we have evidence that the bone mass you have at the age of 80 reflects what you started with very early in life,” observed Dr. Kassim Javaid, of the MRC Epidemiology Resource Center, Southampton, UK.
- The rate of osteoporosis in Latin American is growing and higher than previously estimated.
- Exercise in childhood and adolescence may stave off osteoporosis. “Physical activity is important for optimal bone accrual during childhood, consequently leading to higher peak bone mass,” said Miryoung Lee, of the Wright State University School of Medicine, Ohio, USA.
- Cigarette smoke, both primary and secondary, can weaken your bones and increase the risk of fractures. “Young smokers have significant losses in bone density,” said Mattias Lorentzon at the Center for Bone Research at Gothenburg University, Sweden.

THE BONE ESTROGEN STRENGTH TRAINING STUDY FROM THE UNIVERSITY OF ARIZONA IN TUCSON

The Bone Estrogen Strength Training (B.E.S.T.) Study had representation at the conference by presenting four posters including the Effects of Hormone Therapy, Calcium Intake, and Strength Training Exercise on Six-Year Bone Changes in Postmenopausal Women. Zuzuarregui RP¹, Cussler EC², Lohman TG², ¹Stanford University, Palo Alto, CA, USA, ²University of Arizona, Tucson, AZ, USA.

Jaw Osteonecrosis with Bisphosphonates

By Associate Professor, T. Diamond – Osteoporosis
Australia

<http://www.osteoporosis.org.au/html/healthmain.php#jaw>

The adverse vent of jaw osteonecrosis has been reported most commonly with the use of intravenous bisphosphonates (zoledronate and pamidronate) in cancer patients, but has also been reported with the use of oral bisphosphonates in osteoporosis and Paget's patients. There have been 78 cases associated with alendronate



therapy in 20 million patient years of exposure (Fosamax, Merck & Co.) and there have also been a number of cases associated with risedronate (Actonel, Procter & Gamble).

What is it?

A number of conditions including “dry sockets” are currently grouped under the name of “jaw osteonecrosis.” In the worst case, individuals develop a deformity around or at a tooth socket. A painful and gaping hole may occur in the jaw. The deforming area around dead bone may fail to heal which may result in chronic dental problems.

Why does it occur? Why is the jaw affected?

The cause is not understood, nor is it clear why some patients get the more severe condition. However, bone normally undergoes renewal on a continuous basis. This remodeling process involves osteoclasts resorbing old, possibly damaged bone and osteoblasts building new bone. Jaw osteonecrosis may stem from the mechanism of action of bisphosphonates. These drugs work by preventing the resorption of old bone, since bisphosphonates are toxic to the osteoclasts. This leads to a reduction in bone turnover that may be more critical in the jaw.

Bone in the jaw has a faster turnover than bone elsewhere in the body, both because it is subjected to constant stress from activities such as talking and chewing and also because of the presence of teeth, which mandates daily bone remodeling at the periodontal ligament. Also the jaw can often be damaged during dental surgery such as extractions. The potential concentration of these drugs in the jaw bones, when coupled with chronic invasive dental diseases/treatments and the thin mucosa over the bone, may predispose to the condition being manifest in the jaw.

Who is at risk?

Jaw osteonecrosis has usually been observed after patients have been taking therapy for five or more years. However, it has been reported to occur earlier in the presence of certain risk factors. For example, of the 78 cases with alendronate, most developed after an invasive dental procedure, such as a tooth extraction. Other risk factors include oral infections, use of steroid therapy and radiotherapy.

How common is this problem?

Jaw osteonecrosis is rare, occurring in perhaps one out of 1,000 to 10,000 patients. At the US Federal Drug Administration hearing on this subject in March 2005, Novartis reported 875 possible cases of jaw osteonecrosis associated with the two intravenous products, Zoledronate

and Pamidronate. The majority of these cases occurred in patients with cancer treated with doses ranging up to 20 times higher than used in osteoporosis. As of June 2005, Merck had received 78 reports of jaw osteonecrosis associated with Alendronate. However, the company saw no cases of jaw osteonecrosis during preclinical studies, in which alendronate was used at far higher doses than are approved for osteoporosis, and also no cases were seen in controlled clinical trials, which involved more than 17,000 patients. Alendronate has been on the market for 10 years now, during which time total exposure to the drug is estimated at around 20 million patient-years. Moreover, these case reports have not all been carefully evaluated and some may represent relatively mild problems, such as dry socket that have been reported long before bisphosphonates were in use.

Prevention is better than cure.

Despite its rarity, physicians who prescribe bisphosphonates should be aware of this side effect and should discuss it with patients. It is important to ask about dental hygiene before starting therapy. The best strategy is prevention, as most cases appear to follow a dental procedure. If the patient's dental fitness is in doubt, it may be prudent to send them for these procedures before they start on a course of bisphosphonate therapy and to encourage thorough dental hygiene at all times. Once on the drug, patients should be advised to let their dentist know they are taking such medication and, in general, invasive dental procedures should be avoided. It may be prudent to temporarily withdraw bisphosphonate therapy before such procedures although it is recognized that these drugs remain in bone long term - for example, Alendronate has a half-life of about 10 years.

Summary

In osteoporosis, the bisphosphonates have been shown to increase bone mineral density and significantly reduce the risk of fractures. The very small potential absolute risk of jaw osteonecrosis with doses used to treat osteoporosis must be kept in perspective and considered in relation to their demonstrated benefit.

Newest Investigational Drug Treatment

A treatment for women over 80 with osteoporosis has shown significant reduction in vertebral and non-vertebral fractures over a five year period. The new treatment is Protos® (strontium ranelate). Since osteoporosis is a progressive disease (as people get older their disease worsens making their bones more susceptible to fracture), this new treatment is prime for the elderly

population. Protos® offers double benefits by increasing bone formation and decreasing bone resorption. It is approved in many countries around the world, but is still in key phase 3 clinical trials in the United States. One of these 3 is in Tucson at Northwest Hospital. Other trade names for this treatment are Osseor®, Protaxos®, and Bivalos®.

Source: *Journal of Clinical Endocrinology and Metabolism*, 2005; 90 (5) 2816-2822 and from an oral presentation given at the World Congress on Osteoporosis, June 6, 2006.

Clinical Trials for Osteoporosis Treatment in Arizona

A bone cement for vertebroplasty is under investigation at a research site in Scottsdale. In Tucson, Chandler and Phoenix, clinical studies are underway for marketed osteoporosis medicines. And for women with low bone density and vertebral fracture, a study is on-going in Bullhead City. These are but a few of the current research studies focused on the effects of osteoporosis and the potential benefits of various treatments.

Source: This is a composite of articles from CenterWatch, a clinical trials listing service found at:

<http://www.centerwatch.com/patient/studies>.

ClinicalTrials.gov provides regularly updated information about federally and privately supported clinical research in human volunteers at <http://www.clinicaltrials.gov>

Center Watch provides information on industry sponsored drug trials at the following websites:

<http://www.centerwatch.com>
www.radiantresearch.com

Mayo Clinic, College of Medicine, provides clinical trials information at this website:

<http://clinicaltrials.mayo.edu>

Nutritional Needs as You Age

You need more Vitamin D as you get older. Vitamin D helps your body absorb calcium. Daily Vitamin D needs in International Units (IU) changes with age. The daily needs are:

- until age 50, 200 IUs
- age 51-70, 400 IUs
- over age 70, 600 IUs.

If you want more information on nutritional needs, see the Bone Builders web site at www.bonebuilders.org and click on nutrition.

Vitamin K News

Vitamin K recent research now shows that Vitamin K plays a critical role in the making of proteins, like osteocalcin, needed to build bone and that four times the current recommended (90 micrograms for women and 120 for men) intakes may be best for bone health. Where to find Vitamin K? Dark leafy greens are your best bet. Among the riches in K are kale, spinach and collard green (418 to 531 micrograms per ½ cup cooked). Swiss chard and turnip greens provide more than 200, broccoli and leaf lettuce about 100 micrograms per serving. A Harvard study found that women who ate lettuce at least once a day were less than half as likely to break a hip as those who ate lettuce no more than once a week. So go for the green.

Source: *Environmental Nutrition*, July 2006.

Bone Appétit

Summer Pasta Salad

Makes 6 side dish servings



- 8 ounces uncooked medium pasta shells
- 1 cup frozen green peas, cooked & drained
- ½ cup sliced celery
- 2 tablespoons chopped green onions
- 1 (8-oz.) container plain lowfat yogurt
- ¼ cup light mayonnaise
- 2 teaspoons prepared Dijon-style mustard
- 2 teaspoons dried dill weed
- ¼ teaspoon salt
- ⅛ teaspoon pepper
- 1½ cups tomatoes, cut in wedges (or cherry tomatoes halved)
- 4 ounces sharp cheese, reduced fat (2%) sliced
- dark green lettuce leaves

1. Cook and drain pasta according to package directions. Place pasta in large bowl with peas, celery and onion.
2. In small bowl, combine yogurt, mayonnaise, mustard dill weed, salt and pepper, stirring well. Pour over pasta and stir lightly to coat well. Cover bowl and refrigerate 1 hour or more.
3. For each serving, line a small serving plate with a lettuce leaf. Scoop pasta mixture onto that, and garnish with cheese and tomatoes.

Nutrition Facts per serving: Calories 290; Protein 14 g; Fat 8 g; Carbohydrate 38 g; Fiber 3.6 g; and **Calcium 248 mg.**

Recipe courtesy of Lynne Durrant, Mohave County.

Maricopa County News

New Bone Builders Program Coordinator

A veteran of the Bone Builders Program at Pima County Cooperative Extension, Donna Harris joins us in Maricopa County. Donna has experience with the State Health Department and the American Red Cross in health education and promotion. She will be calling you to introduce herself and if she misses you, give her a call at 602-470-8086, extension 316 or email her at dharris@ag.arizona.edu for any suggestions and requests.

You Asked, We Respond

Thanks to those of you who responded to the Bone Builders survey sent with a previous Bone Builders newsletter, we are providing articles on the requested topics. The most frequently requested topics were: new osteoporosis drugs, exercise, and volunteer opportunities. We welcome your opinions and ask you to contact the Bone Builders coordinator to express your interests.

Volunteer Opportunities

Upcoming Health Fairs and Public Presentations: You may want to host an information booth, prepare materials in the office for the health fairs or give a presentation.

- September 26, 2006 - Arizona State University Employee Lunch Presentation
- October 13, 2006 - Banner Desert Medical Center Girl's Night Out
- November 4, 2006 - South Mountain Village Festival Health Fair

Office Support: Like to organize? The Bone Builders office is moving at the County Extension and filing, separating, organizing all the information materials will be an ongoing project. Wanna help?

Phone Contact: How about talking to your fellow Bone Builders volunteers? Making a personal phone call to update our volunteer list, to collect responses to our volunteer survey, and to check on volunteers' availability are all possibilities that you could do to support the program and to reach the community.

Any of the above options are invitations for you to use your Bone Builders training. Please call Donna Harris at 602-470-8086 or email dharris@ag.arizona.edu to let her know how you can help.

Sarcopenia? What is it? Another benefit of DEXA scans?

Do you know someone with osteoporosis who has had a loss of muscle mass with aging? A recent study found that 50% of postmenopausal women with osteoporosis also had sarcopenia. Sarcopenia is the decrease of muscle mass common in the aging process. Efforts to increase muscle strength are vital to reducing the risk of falling and strengthening bone. Resistance exercises and weight-bearing exercises are beneficial to the bones of the arms. Legs and back as well as increasing muscle strength.

Source: *The Osteoporosis Report*, National Osteoporosis Foundation, Spring 2006, Volume 22, No. 1, Page 4.

Volunteer Birthdays!

We want to wish a great big Happy Birthday to our following volunteers:

June

- 7 - Yolanda Madrid
- 28 - Karin Schwalbe
- 30 - Freida A. Reed

July

- 1 - Wendy Tee and Jessica Garay
- 15 - Angela Vanderlans
- 23 - Candy Stahoviak
- 25 - Margot Langstaff
- 28 - Carol Fruciano

August

- 4 - Lilia E. Amaya
- 6 - Sarah Theis
- 19 - Rebecca Madrid
- 20 - Barbara Rhein and Marie Jacobs
- 28 - Denise Arnold
- 31 - Sheryl Arpin



If you want to be added to the *Birthday List* let Donna Harris know. We promise NOT to publish the year.

Bone Builders Physical Activity Program (BBPAP) in Maricopa County

Strength Training: Is it really for me?

According to Miriam Nelson of Strong Women fame and experience, no group in our society can benefit more from regularly performed exercise than middle-aged women and older adults. Scientific research has demonstrated that exercise with weights (strength training) will increase strength, muscle mass, and bone density in middle-aged and older women. Strengthening exercises also reduce the risk for numerous chronic diseases such as diabetes, heart disease, osteoporosis and arthritis. Psychological health is affected as well. Strength training has been shown to reduce depression and improve sleep, and it contributes to a sense of well being among older adults.

Disability and a reduced ability to perform daily activities are primary concerns of many older women today. The loss of muscle mass combined with chronic disease symptoms can limit their ability to perform daily tasks such as cleaning or shopping, seriously compromising their independence. Strength training is an extremely powerful antidote to the loss of muscle mass (sarcopenia) and the development of chronic diseases that are frequently associated with aging. Research has shown that increasing muscular strength in the elderly through effective strength training (ST) programs is both a realistic and a safe mechanism by which to maintain functional status and independence.

Yet despite solid evidence of the many benefits of strength training, only 7% of older women do this type of exercise. Reasons cited are many. Women are fearful of injuring themselves as a result of ST; they worry they will bulk up; they have no experience with lifting weights; they lack access to a trainer who is experienced with lifting weights; many fitness centers are not geared towards women and strength training; and few community programs are available, especially in inner cities and rural settings.

Consider, for yourself, some of the scientifically proven benefits of strength training for middle-aged and older women, listed below, including but not limited to:

- Arthritis Relief. Studies out of Tufts University have shown, after completing a 16-week strength training program with older men and women with moderate to severe knee osteoarthritis the results showed a 43% decrease in pain, increased muscle strength and general physical performance, improved clinical signs and symptoms of the disease and decreases in disability. Not only did the study show the effectiveness of ST to ease the pain of osteoarthritis as extremely potent, but similar effects were seen in patients with rheumatoid arthritis.
- Restoration of Balance and Reduction of Falls. As people age, poor balance and flexibility contribute to falls and broken bones. When done properly and through the full range of motion, strengthening exercises increase a person's flexibility and balance decreasing the likelihood and severity of falls.
- Strengthening of Bone. Post menopausal women can lose 1-2% of their bone mass annually. Results published in the *Journal of the American Medical Association* in 1994 showed that ST increases bone density and reduced risks for fractures among women ages 50 to 70.
- Proper Weight Maintenance. Strength training is crucial to weight control because individuals who have more muscle mass have a higher metabolic rate. Muscle is active tissue that consumes calories, whereas fat uses very little energy. Strength training can provide up to 15% increase in metabolic rate, tremendously helpful for weight loss and long-term weight control.
- Improved Glucose Control. According to Miriam Nelson, studies now show that lifestyle changes such as strength training have a profound impact on helping older adults manage their diabetes.
- Healthy State of Mind. Currently, it is not known whether significant improvements in depression can be attributed to people feeling better when they are stronger or if strength training produces a helpful biochemical change in the brain. According to Miriam Nelson, it is likely a combination of the two. When older adults participate in strength training programs, their self-confidence and self-esteem improve resulting in a strong impact on their overall quality of life.
- Sleep Improvement. People who exercise regularly enjoy improved sleep quality. As noted by Miriam Nelson, they fall asleep more quickly, sleep more deeply, awaken less often and sleep longer.
- Healthy Heart Issue. Miriam Nelson reports that, in one study, conducted in the Tufts University Laboratory, cardiac patients gained not only strength and flexibility but also aerobic capacity when they did strength training three times a week as part of their rehabilitation program. This and other similar studies has prompted the American Heart Association to recommend strength training as a way to reduce risk of heart disease as a therapy for patients in cardio rehabilitation programs.

Toe Stand Exercise

The **Toe Stand Exercise** was developed by The Strong Women Program (A National Fitness Program for Women).

The toe stand is an excellent exercise that improves balance and ankle flexibility while also strengthening the gastrocnemius and soleus muscles in the back of the lower legs. As participants get stronger, they can progress from Level 1 to Level 2 of the move.

Level 1: Toe stand on both feet with hand support

Level 2: Same as Level 1 but without hand support

Start with Level 1. If your calf muscles are weak or inflexible, you may not be able to raise yourself very much. Work on improving the strength of these muscles until you can lift yourself all the way up onto your toes. Then go to *Level 2* – the same exercise but without help from your hands.

Starting position: Stand 12 inches away from a wall (or back of a chair), with your feet about 12 inches apart.

Level 1: Rest fingertips lightly on a wall (or back of a chair) to help you maintain your balance.

Level 2: Same as Level 1 but without your fingertips actually touching the wall (or chair). For safety's sake, always perform this exercise with a wall (or chair) in front of you.

The move:

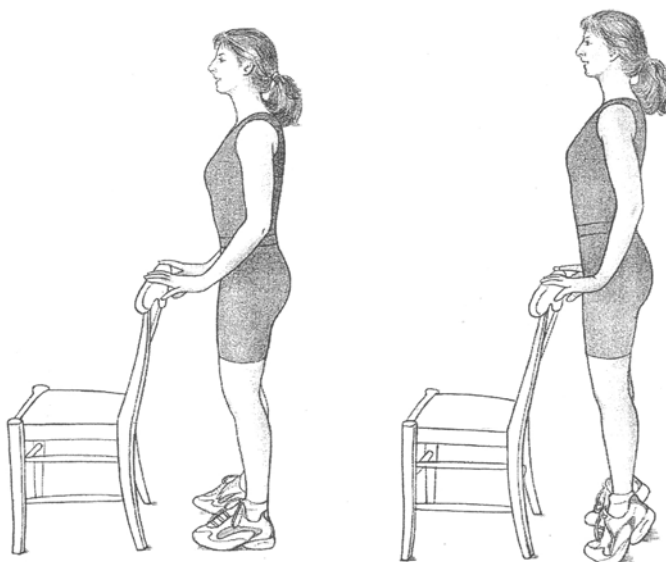
1. Slowly raise yourself as high as possible on the balls of your feet.
2. Hold the position for a slow count of three.
3. Slowly lower your heels back to the ground.

For both levels:

Where you will feel the effort: In your calves, ankles, and feet.

For safe and effective exercise results, when doing the *Toe Stand Exercise* always:

- 1) Make sure you maintain good upright posture.
- 2) Do the toe stand slowly – many people have a tendency to raise and lower themselves too quickly.
- 3) Don't hold your breath.



Sharon Hoelscher Day

Sharon Hoelscher Day, Extension Agent, Family & Consumer Sciences
Coordinator, Community Health Programs
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- Dr. Linda Larkey, Phoenix Area Director, Women's Cancer Prevention Research Initiative and Research Assistant Professor, College of Public Health
- Donna Harris, Program Coordinator, 602-470-8086, ext. 316, email: dharris@ag.arizona.edu
- Elizabeth Schnoll, Health Educator, 602-470-8086, ext. 324, email: eschnoll@ag.arizona.edu

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter by contacting Sharon H. Day at 602-470-8086, extension 332. Requests should be made as early as possible to allow time to arrange the accommodation.