

The Challenges Facing Osteoporosis Research

Osteoporosis is a dreaded disease that commonly affects our older people. Although research has enabled us to find many treatments that decrease the number of broken bones due to osteoporosis, we are far from a cure. Many promising avenues of research are being explored, but unfortunately it is becoming very difficult to obtain funding for research studies.

Our Concept of Osteoporosis is Changing

We think it is important to call attention to this change. Earlier we thought osteoporosis was all due to bone loss. However, our research, and that of others, has shown that poor bone strength and osteoporosis is due to **poor bone quality and low bone density**. This new understanding has opened doors to new directions for research of therapeutic interventions. From a practical standpoint, we diagnose osteoporosis in a postmenopausal women or men of similar age, when a fracture results from trauma equal to or less than a fall to the floor from a standing height. Some people have osteoporosis without very much loss of bone, although bone loss remains the most important element of fracture risk, along with advancing age.

NIH Funds Decline

The National Institutes of Health (NIH) provide the largest single source of funding for biomedical research in the U.S. and in the world. The annual NIH budget during recent years contained about \$39 billion, an amount less than 0.001 percent of the federal budget. This fiscal year it will **decline by \$1.5 billion**. This is a 3.8% decline in a budget that has been constant for a number of years and will result in a similar decline in the number of grants funded. That same **3.8% cut** will occur in currently funded long-term grants, which will limit their data production, and will result in wastage of money already spent on

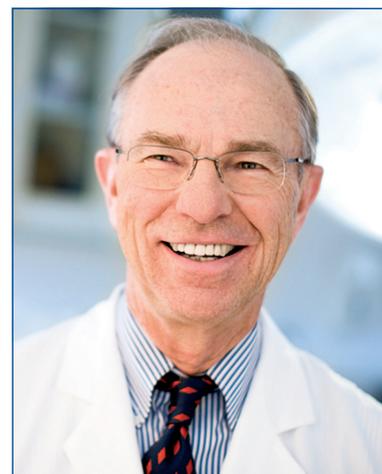
projects that will be terminated before their scheduled completion, too soon to produce the data needed for their planned outcomes. At this time, **only 8% of new grant applications are funded**, and the

average age of first-time grant winners is now 42! Thus we are also in danger of significant losses in research manpower/womanpower, particularly among young investigators.

Other Funding Sources Are Limited

The pharmaceutical industry is another source of funding for biomedical research. But this research is targeted at development of drugs and depends on the kind of basic and human research coming out of federally funded work. The most important basic discoveries emerge from NIH and other federally supported research and from research foundations/endowments. The result has been a **significant slowdown in development of new drugs in recent times**, some of which is due to reduction in federally funded research and the resultant reduction in basic research needed for new drug development. Drug companies are gradually shrinking their own research operations, which also does not bode well for new drug development.

Other funding sources supporting basic research, such as foundations and private philanthropy, are also shrinking due to the ongoing economic slowdown that we have been experiencing.



Robert R. Recker, M.D., M.A.C.P., F.A.C.E.
Professor of Medicine
Creighton University School of Medicine
Director, Osteoporosis Research Center

Public health consequences of Osteoporosis Are Devastating

The shrinking support for biomedical research comes at a time when the problem of osteoporosis is increasing. Epidemiologic studies are now showing that about **50% of women and 25% of men alive today will have an osteoporotic fracture before they die**. These numbers surely underestimate the true incidence of osteoporotic fractures since only about 25% of patients discharged from the hospital or emergency room for treatment of an osteoporotic fracture have a formal diagnosis of osteoporosis or receive treatment. What happens is that their discharge diagnoses are “fracture”, but the underlying osteoporosis is not recognized. This is made even more critical since fracture is known as a “sentinel event”. This means that the risk of another fracture after one suffers the first osteoporotic fracture ranges from **3-fold to 27-fold greater** than in the general population of the same age depending on the presence or absence of factors in addition to low bone mass. **Osteoporotic fractures in women in the U.S. number more than 1.7 million per year, a figure greater than the combined incidence of breast cancer, heart attack and stroke**. The health consequences of these fractures are tragic. For example, in the case of hip fracture, 25% die in the 6 months following the fracture, about one half go to nursing homes, some permanently, and none regain 100% of their pre-fracture activities of daily living. Hip fracture is the leading cause of nursing home admissions.

Health Care Costs of Osteoporosis Are High

Treatment of osteoporosis and the attendant fractures are now the ninth leading expense to Medicare. This is not surprising given that, for instance, the cost of treating a hip fracture varies from about **\$30,000 to about \$60,000** in different parts of the country. This does not include the expense of post-hospital outpatient care or long-term disability care.

The Impact of Osteoporosis Is Underappreciated

Unfortunately, in spite of the human tragedy and expense of osteoporosis and its attendant fractures, the public barely seems to recognize the existence of osteoporosis. This is true even among fracture patients. Frequently a patient with an obvious osteoporotic fracture will tell me, **“I surely do not**



have osteoporosis. Anyone would have had a fracture if they fell as hard as I did”. Further, the attitude toward osteoporotic fracture in both the general population and among many health care providers seems to be that fracture is not very important to health. After all, one gets the fracture repaired and then resumes normal life, just as a child would who just fell out of a tree and fractured his arm. The Osteoporosis Research Center is trying to do something to change this attitude in cooperation with the National Osteoporosis Foundation, and its subsidiary, The National Bone Health Alliance. You may log on to their web site, **NOF.org**, or go to **fracturepreventioncentral.org**, to find out all of the details of this program.

Current Treatments for Osteoporosis are Inadequate

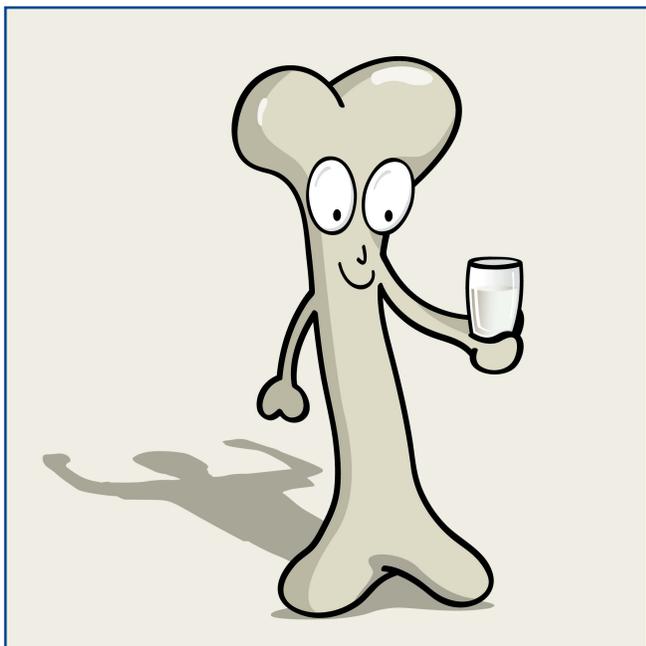
In 1995 we were provided the first effective drug for treatment for osteoporosis besides calcium and vitamin D supplementation. Since then five more drugs have entered the market. However, almost none of the osteoporosis experts are satisfied with the current treatments for osteoporosis. Yes, they represent advances and all reduce the risk of fracture by about 50%. However, none represents a “cure” of osteoporosis since about **50% of the risk remains**. We see patients frequently in the clinic who have an osteoporotic fracture while on approved treatment. Thus we frequently confront the shortcomings of our current treatment tools.

Endowment

The Osteoporosis Research Center (ORC) has been working hard on the problem of osteoporosis for

nearly five decades. We have had some important discoveries and we are inching closer to a solution for treatment and prevention of fractures from osteoporosis. **For example, we have discovered a gene mutation in humans that results in very strong bones.** The 19 affected members of the kindred we studied ranged in age from 5 to 86 years old, and none had ever suffered a fracture. Their bone densities were all about twice the average in the normal population. This has led to extensive research in our lab, in many labs around the world, and by pharmaceutical companies, to use this discovery to create better treatments.

However, we are not yet very close to a solution. The research must continue, and this is where our endowment is crucial. In order to make up for NIH and other funding reductions we have established an endowment to support the ongoing work of the ORC. This is necessary in order to keep the research labs intact through the ups and downs of funding and to provide discretionary funds for developing preliminary data to support new initiatives in this research. We hope you will be as generous as you can in **contributing to this endowment.**



Strong Bones, Strong Minds 2013

Back by popular demand, the **Strong Bones, Strong Minds** educational event will be in Omaha as part of the National Osteoporosis Foundation's Generations of Strength Salon Series.

Saturday, May 4 from 1 p.m. - 2:30 p.m.

Osteoporosis Treatment Options, will be presented by Mohsen Zena, M.D.

Zena is an assistant professor of endocrinology and metabolism at the Alegant Creighton Health Creighton University Medical Center.

This event will take place at the Omaha Public Library's Millard Branch located at 13214 Westwood Lane. Admission is free but registration is required. For more information, please visit or call the Millard Branch at **402.444.4848**.

Features of the event are:

- Bone healthy treats from Roberts Dairy
- Sign up for a free future bone density scan (DXA) at Creighton University's Osteoporosis Research Center. *Some restrictions apply.*
- Support the National Osteoporosis Foundation and Friends of the Omaha Public Library with the purchase of a \$25 Pearls of Strength® freshwater pearl bracelet. *Ten percent of NOF's sales support the Omaha Public Library.*

Strong Bones, Strong Minds 2013 is sponsored by Creighton University, Omaha Public Library and Roberts Dairy Foods.

The National Osteoporosis Foundation is the leading health organization dedicated to preventing osteoporosis and broken bones. NOF is committed to empowering generations of strength by starting conversations about bone health and family health history. To learn more about NOF, please visit their website at www.nof.org.

Opportunities to Participate

The Creighton University Osteoporosis Research Center would like you to consider participating in one of our research studies. Below is a list of our current studies in which you might be interested. Please feel free to pass this letter on to friends, family and coworkers who may also be willing to participate.

Study of Calcium and Vitamin D in Children and Adolescents

This research study is comparing the effects of calcium and vitamin D on athletes and non-athletes.

- Boys and girls ages 8-18
- 2 visits: one at the Osteoporosis Research Center (30th California) and one at the Nebraska Spine Center (136th California)
- \$150.00 stipend for study completion

Bone Quality in Postmenopausal Women

This research study is looking at the causes of osteoporosis in postmenopausal women and consists of three visits to our office.

- Females, 45-80 years of age
- Postmenopausal for at least four years
- History of a broken bone in the last five years, not caused by a auto accident
- \$300 monetary stipend for study completion

Type 2 Diabetes Insulin Study

This research study is testing concentrated insulin to see how it will affect a Type 2 Diabetics HgA1C. This is a 24-week study.

- Men and women, age 19-75
- History of Type 2 Diabetes Mellitus
- On a current insulin dose of 200 units or more per day
- \$395 monetary stipend for study completion

Vertebral Fracture study

This research study is comparing two FDA approved medications to see if one of them will be better at preventing future vertebral fractures. This study is a two year program.

- Postmenopausal women age 45 or older
- History of vertebral (spinal) fractures
- History of lower bone density
- \$300 monetary stipend for study completion

Young Women's Bone Health Study

This research study is working on developing treatment options for pre-menopausal women with lower bone density and for women with history of a broken bone (fracture) as an adult.

- Females, 20-45 years of age
- Premenopausal with regular menstrual periods
- Willing to be on a FDA approved study medication
- \$400 monetary stipend for study completion

Pro-For Study

This research study is comparing 2 approved osteoporosis medications, Forteo and Prolia, on formation of new bone and the potential to prevent future fractures.

- Postmenopausal women ages 55-89
- Six month study
- \$550 monetary stipend for study completion

If you are interested in learning more about any of these studies, please contact us at **402.280.2663** (BONE) or toll free **800.368.5097**. Please leave a message with your name, phone number and best time for us to call. Or visit **osteoporosis.creighton.edu** and click on **ORC Research Opportunities**.

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Know someone who might be interested? Please pass this on . . .

Recent Donations to the Creighton Endowment for Osteoporosis

In Memory of

Daniel and Jeanette LeMaster

Julie M. Schlesinger

Eileen Ann Ryan

From: Robert R. Recker, M.D. and Susan Recker

Larry Myers

From: Robert R. Recker, M.D. and Susan Recker

Loretta West

From: Everett West

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Susan Dowell, M.D.

From: William and Kathleen Corcoran

Robert R. Recker, M.D. and Susan Recker

From: Anne and Jeff Lieben

Norman F. Rotert, S.J.

From: Theresa, Gordon and Jon Kempf

If you are interested in making a donation, please send a contribution to:

Creighton Endowment for Osteoporosis

In memory of Sister Anne Evers

601 North 30th Street, Suite 4820

Omaha, NE 68131

*If you have any questions please contact Susan Recker at 402.280.4810
or visit osteoporosis.creighton.edu.*



Creighton University
2500 California Plaza
Omaha, Nebraska 68178

Address Service Requested

Phone: 402.280.4470 • Fax: 402.280.5173 • Website: osteoporosis.creighton.edu • E-mail address: orc@creighton.edu

THE GIFT OF GIVING

Consider a donation in honor of a loved one to the Osteoporosis Research Center

Just mail this form to:
Creighton Endowment for Osteoporosis
In memory of Sister Anne Evers
601 North 30th Street, Suite 4820
Omaha, NE 68131

A Contribution is enclosed to the Sister Anne Evers Endowed Research Fund

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