

## CaMos Update

SUZETTE POLIQUIN, NATIONAL COORDINATOR, MONTREAL



Hello to you all. Once again we are here with our annual newsletter to keep you in touch with our ongoing study.

Over the last two years we have completed the Year 10 extensive interview and tests for all those recruited between 1995 and 1997. At this point in time there are 6257 participants remaining in the study, representing close to 2/3 of

the original cohort. Your long-term participation is providing an unparalleled continuity of data, making CaMos an extremely valuable and unique study within Canada.

The second year interview and testing is ongoing with 933 youth recruited between 2004 and 2006.

Everyone, please keep in touch especially with any change in address or contact information.

All of you will continue to receive a short green questionnaire annually. Starting with the year 12 follow-up for the original group and year 3 follow-up for the youth, this questionnaire will be incorporating a small but important change. For greater accuracy the medications list will include a space for you to record the number of months you have taken that medication in the preceding year.

CaMos is at the forefront of osteoporosis research and was well represented at the 2007 annual meeting of the American Society for Bone Mineral Research (ASBMR), with eight presentations including: the association between ultrasound and bone mineral density measurements; the rate at which bone mineral density changes over time; new fractures in people with severe osteoporosis; spine fractures as identified by x-rays, predicting increased risk of future fractures; health related quality of life in individuals with and without fractures sustained since entering the study; and the relationship between

the use of medications like nitroglycerin (for heart pain) and their association with bone mineral density.

We continue to gather and analyze data from your questionnaires and test results. Our goal is, as always, to further identify factors associated with osteoporosis and fracture. The information you provide to CaMos will contribute to ongoing research aimed at improving the diagnosis and treatment of osteoporosis, aiding in preventing its development, and planning for future health care needs and resources for Canadians. ♦

### The Bare Bones of: *Sleep, Weight Cycling and Pain*

It's sometimes difficult as you are being interviewed to understand why we ask certain questions and what they have to do with your bones.

#### Dr. Prior weighs in on how sleep habits and weight cycling are related to bone health.

**Sleep Habits** – The sleep habit question focuses on problems such as trouble falling asleep, waking in the middle of the night, or waking too early in the morning. Sleep problems are associated with stress hormones and greater risks for depression in both men and women. In women they are also closely associated with the hormonal changes of perimenopause and early menopause. Elevated stress hormones, depression and hormonal changes are all related to increased bone loss.

**Weight Cycling** – The questions - have you lost 10 to 20 pounds, have you regained the weight and if so how many times - are asked because bone is lost along with losing weight. Bone density and strength are not regained easily, certainly not at the rate that the weight may be (see **Bare Bones**, page 2) ►

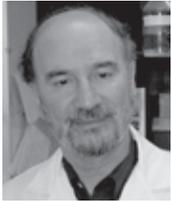


Dr. Jerilynn Prior  
Vancouver Centre  
Director

(Bare Bones from page 1)

regained. Repeated weight loss and gain over time amplifies this problem.

Weight loss where needed should be attempted slowly, steadily, whilst ensuring a balanced diet. Weight loss of a pound a month obtained by increased exercise is ideal.



**Dr. Tassos Anastassiades**  
Kingston Centre  
Director

### Dr. Anastassiades explains the back pain question.

**Pain** – The questions regarding back pain are designed to help us try to figure out what proportion of the CaMos population has severe chronic back pain and how this relates to osteoporotic fractures and osteoarthritic changes seen in x-rays.

The cause of chronic back pain is often unclear, although in some cases it can be associated with pinched nerves or prolapsed discs. Most osteoporotic fractures of the upper and lower back happen without symptoms or pain. Repeated small osteoporotic fractures in the spine can lead to a gradual loss of height over a number of years and will occur usually in older individuals.

CaMos has shown a high rate of fractures of the spine, detected by X-rays in men as well as in women. A minority of these fractures can be very painful and sometimes cause prolonged disability.

Osteoarthritic changes can also be seen on spinal x-rays, but again, the level of back pain experienced is not always reflective of the severity of the arthritis present.

Ultimately, the questions relating to back pain will better help us to understand the natural course and extent of disability associated with back pain with and without spine fractures. ♦

## New and Improved CaMos Website



If you would like to know more about CaMos do have a look at our website: **WWW.CAMOS.ORG**. The website contains information on all aspects of the study, a list of our publications, and links to other osteoporosis related websites. If you don't have access to a computer at home then try out one at your local library or seniors' centre. Staff will generally be there to assist you if you need help getting started.

## Recent Publications

One of the questions most frequently asked by CaMos participants is: "How exactly does my information get used?"

The following are excerpts from articles that use data collected during CaMos interviews and follow-up questionnaires over the first five to seven years.

### Osteoporosis and Men Fragility Fractures, Diagnosis and Treatment

Osteoporosis is a disease that many assume only happens to women! That is despite the fact that approximately one out of every eight Canadian men over the age of 50 has osteoporosis. Individuals who are over age 50 and have a low trauma fracture (one caused by a fall from standing height) should be assessed for osteoporosis and considered for treatment. Unfortunately many Canadians, especially men, who have low-trauma fractures do not receive diagnosis or treatment for osteoporosis, this is termed an "osteoporosis care gap". A recent paper looked to see if men who had fractures were investigated for osteoporosis and whether they were treated for it.

Researchers examined data collected from 2187 CaMos men, aged 50 and over, during the initial five-year period of the study. At baseline only 2.3% of men with a low-trauma fracture reported having received a diagnosis of osteoporosis from their physician, and by the fifth year of the study, this percentage had increased to 10.3%. That's good, but after five years in CaMos, 90% of these men with a low-trauma fracture had not received any treatment for osteoporosis. Hip fractures were the most commonly treated fracture type (37.5% by year five). Men who reported receiving a physician's diagnosis of osteoporosis during the study were also more likely to receive treatment including either a bisphosphonate (67% of participants) or calcium and/or vitamin D (87% of participants).

Individuals over age 50 who have had a low-trauma fracture are at high risk of having another fracture in the future (increased 2-4 times above those without a fracture). Treatment can improve bone mineral density and reduce the risk of future fractures.

Based on our study results, it can be concluded from CaMos that in men (aged 50 and over) with fractures there was a care gap related to both osteoporosis diagnosis and treatment.

*Reference: Papaioannou A, et al. The osteoporosis care gap in men with fragility fractures: the Canadian Multicentre Osteoporosis Study. Osteoporos Int. 2007 Oct 9 [Epub ahead of print]* (see **Recent Publications**, page 4) ►



**Dr. Alexandra Papaioannou**  
Hamilton Centre  
Co-director

## Question and Answer

**Q:** *Vitamin D has been the subject of a lot of media attention recently. Why is it so important, how do you get it, and how much do we really need?*



**Dr. David Hanley**  
Calgary Centre Director

**A:** Vitamin D is necessary for the body's absorption of calcium, and the uptake of calcium and phosphate into bone. Severe deficiency results in bones that are weak and tend to bend (called rickets in children) with less mineral (called osteomalacia in adults). There is now reasonable evidence that a milder vitamin D deficiency is very common, and contributes to the problem of osteoporosis. The recent media attention can also be attributed to studies that have linked high vitamin D intake with a reduced incidence of certain cancers. Vitamin D is also thought to play a role in the reduction in the risk of developing chronic diseases such as diseases of the immune system like rheumatoid arthritis and multiple sclerosis, infectious diseases like tuberculosis, and cardiovascular disease.

There are three ways to get vitamin D: from exposure to sunlight, food and supplements.

An important source of vitamin D is sunlight exposure of our skin. Ultraviolet (UV) light stimulates our skin to make vitamin D from cholesterol. However, during the fall and winter months in most parts of Canada, the sun is low in the sky and the sun's UV rays are filtered out by the atmosphere and prevented from reaching the surface of the earth. Our skin is therefore unable to make vitamin D from October to March. In the summer, when UV rays are at their strongest, it is important to routinely use sunscreen whenever sun exposure is longer than 10 to 15 minutes. However, the use of sun block also prevents skin production of vitamin D. In addition, as we age, our skin becomes less able to make vitamin D.

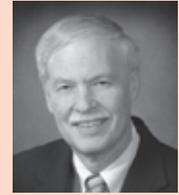
Only a few foods naturally contain significant amounts of vitamin D. However, milk is fortified with 10µg (400 IU) vitamin D per litre, and the possibility that more foods may be supplemented with vitamin D is being reviewed in Canada.

As we age, our requirements for vitamin D increase. In 1997, a Canadian and American expert panel recommended the following intakes: ages 19-50, 200 international units (IU) or 5 micrograms (µg) daily; between ages 51-69, 400 IU (10 µg); and over the age of 70, 600 IU (15 µg). However, in making these recommendations, the panel recognized the lack of good studies of vitamin D requirements, and a need for more research in vitamin D nutrition. It is now generally accepted among experts in vitamin D and bone disease that these recommendations are too low. Osteoporosis Canada currently recommends adults under 50 years of age take at least 400 IU by daily supplement, and at least 800 IU (20 µg) daily after age 50.

(see **Hanley**, page 4) ►

## YOUTH QUESTION

**Q:** *My friend is lactose intolerant and I dislike milk. Does this mean we will have weaker bones?*



**Dr David Goltzman**  
Co-principal  
Investigator,  
Montreal

**A:** Briefly the answer is no! That is, if you make sure your diet contains the nourishment that milk and milk products give you in an alternative form. Let me expand upon lactose intolerance and the nutritional contents of milk that relate to bone strength.

Milk is a very good source of calcium, which is required to build up bone. Adequate amounts are needed at all ages but especially in growing children. Intolerance to lactose or the inability to digest lactose, the major sugar in milk, is caused by a shortage of the enzyme lactase, which breaks down lactose into two simpler sugars, which can then be absorbed into the bloodstream from the intestine. Lactose intolerance is complex to diagnose using symptoms alone, and tests should be used to confirm a correct diagnosis.

Alternative (non lactose) sources of calcium are calcium fortified soy beverage or orange juice, canned fish with bones, or calcium supplements.

It is equally important to ensure you receive adequate levels of vitamin D because that is essential for calcium to be absorbed by the body. Some sources of vitamin D are sunlight exposure, milk and fatty fish. You need to fully discuss your nutritional needs with a health professional if you are lactose intolerant. For additional information on where to find vitamin D, see the question and answer section.

The following food list provides the vitamin D content in International Units \*(IU) of certain foods:

### FORTIFIED SOURCES

Soy beverage	250 mL (1 cup)	120 IU
Margarine	5 mL (1 tsp.)	25 IU
Milk	250 mL (1 cup)	100 IU

### NATURAL SOURCES

Mackerel cooked	90 g (3 oz.)	97 IU
Salmon, sockeye canned	90 g (3 oz.)	702 IU
Sardines, canned	100 g (3.5 oz.)	480 IU
Tuna, cooked	90 g (3 oz.)	828 IU
Egg, 1 whole	(vitamin D is found in egg yolk)	26 IU
Beef liver, cooked	100 g (3.5 oz.)	28 IU

Source: Canadian Nutrient File 2007b

[http://www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index_e.html)

\*40 International Units (IU) = 1 microgram (µg) of vitamin D

## Behind the scenes

### Blood and urine storage and DNA extraction

The blood and urine specimens collected from CaMos participants are received and stored anonymously at the Biochemistry Laboratory of The Centre for Bone and Periodontal Research in Montreal. These specimens are destined for various analyses of bone metabolism biomarkers that may play a role in the development of osteoporosis.



Isabel Bolivar & Miren Gratton  
Biochemistry Lab, Montreal

Receiving samples weekly may seem to be a simple and repetitive task; however, keeping track of the samples, their location in the freezers and all the information associated with their collection is of utmost importance. We have received samples from over 2,500 participants in six CaMos centres.

Immediately after collection in the regional centres the serum and urine samples are divided into micro tubes that contain very small volumes. These are frozen and stored at -80°C.

Later they are sent to Montreal in boxes of dry ice, as it is essential that they remain frozen to preserve the quality of the samples. Each small sample will be thawed only when ready to be tested.

Upon reception in the lab, each sample is assigned a lab identification (ID) number and a location code number. The location code describes precisely which freezer, shelf, drawer and box the sample will be stored in. The lab ID, location code and all the information from each ID card is then recorded in a sample log. With thousands of sample micro tubes to keep track of in CaMos freezers the record keeping has to be meticulous! ♦

(Hanley from page 3)

▶ Vitamin D, if taken excessively, can be harmful to your body. Health Canada currently recommends that people should not take more than 2000 IU (50 µg) daily without medical supervision. Talk to a health professional, such as a doctor, dietitian or pharmacist to find out what level of supplementation is right for you. ♦

## Regional News - TORONTO

### Former Centre Director is awarded the Order of Canada



Dr. Timothy Murray  
Toronto

Dr. Timothy Murray, professor emeritus at the University of Toronto was awarded the Order of Canada for his significant contributions to osteoporosis research and education in Canada. His research contributed to the understanding, diagnosis and treatment of this disease. As a founding member of Osteoporosis Canada, he helped raise public awareness on the risks and prevention of this condition. ♦

▶ (Recent Publications from page 2)

**Glucosamine Usage** – Glucosamine, a non-prescribed treatment is used by a number of people to decrease pain associated with arthritis of the knees and hips. The medication data collected during your interviews gave us an opportunity to look at:

- How many people are using it?
- Whether its use has changed over time?
- Whether men or women are more likely to use it?
- The age of those who use it?
- Whether there are any other characteristics of glucosamine users that are of interest?

Using data up to and including Year 5 we found that for men, glucosamine use increased from 0.9 to 4.7%, for women, it increased from 1.3 to 8.2%.

Glucosamine use was higher among participants over the age of fifty; those living in western Canada; those with arthritis, back pain, and who took a greater amount of their calcium intake from supplements; those with a higher physical activity; those with prior glucosamine use.

The use of glucosamine has increased over the five years. Furthermore, there appear to be two groups of people who use glucosamine. One group tends to be older, and reports more pain and symptoms of arthritis, while the other group appears to be younger and more active.

*Reference: Hopman WM, et al. Prevalence of and factors associated with glucosamine use in Canada. Osteoarthritis and Cartilage, 2006; 14(12):1288-1293.*



Wilma Hopman  
Kingston Centre  
Collaborator

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