

# camoscope

**CaMos**

Canadian Multicentre Osteoporosis Study  
Étude Canadienne multicentrique sur l'ostéoporose

**BONE HEALTH**  
*for life*

[www.camos.org](http://www.camos.org)

ISSUE NO. 14 APRIL 2010

## CaMos across Canada

CaMos has been providing valuable information of world-wide interest and significance in all areas related to osteoporosis for 14 years now and has, with your help, accomplished a lot.

We are currently in the process of designing the study to do follow-up for an additional 5 years. We will continue to analyze the blood and saliva samples that have already been collected and in the future will be using state of the art genetic testing and new imaging equipment to further our knowledge of osteoporosis and to better understand why this disease strikes so many Canadians.

In this issue of the newsletter, we wanted to take you on a tour of the 9 different sites located across the country in St. John's (Newfoundland), Halifax, Quebec, Kingston, Toronto, Hamilton, Saskatoon, Calgary and Vancouver so you can see how your data and test results have been, and will continue to be used.

Please join us as we travel across Canada, from East to West, to look in on each site:

### St-John's

In the summer of 2009, St. John's began collecting blood and urine samples. It is very important for CaMos to have genetic samples from St. John's because places like St-John's, and Quebec City, typically have few people migrating in and out.

In the last decade researchers have been studying the genetic make-up of many common diseases in populations that are genetically isolated and they have found that in these areas the genetic structure of diseases themselves tend to be simpler.

This makes genetic samples from St. John's very valuable since the analyses of the blood collected could help CaMos

researchers more easily identify which genes may be related to bone health.

### Halifax

In Halifax the focus has been on developing a new technique to better predict fracture risk. As fractures are the most painful result of osteoporosis, the better we are at predicting them before they happen, the better we will be able to prevent them.

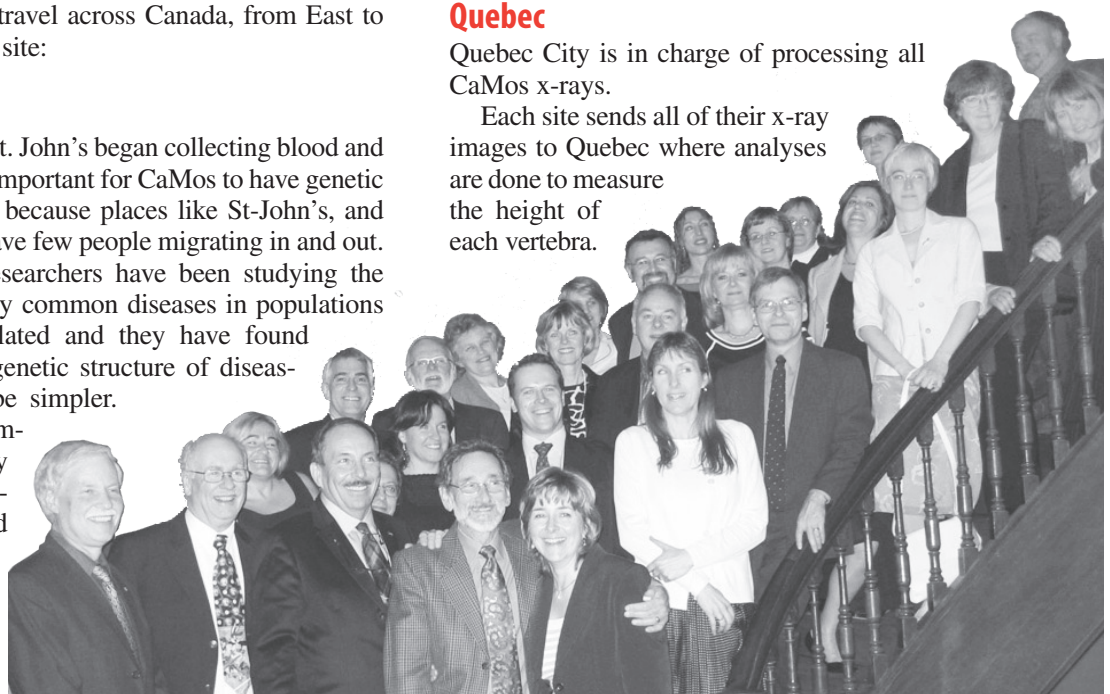
We looked at the bone texture of bone density and spinal X-ray results from the baseline years of the study (1995-1997) instead of just using bone mineral density tests to predict fractures. Our results showed that this technique was better at predicting future fractures than just using bone density alone.

We will continue our research with results from year 5 and year 10 follow-up to further look into how accurately we are able to predict fracture.

### Quebec

Quebec City is in charge of processing all CaMos x-rays.

Each site sends all of their x-ray images to Quebec where analyses are done to measure the height of each vertebra.



The CaMos Team  
Montreal, April 15 2005

► (CaMos across Canada from page 1)

In the spine, a vertebra has fractured when, over time, there has been a significant change in its height.

CaMos x-ray data has confirmed that vertebral fractures are among the most important and reliable predictors of future fracture risk. As they are often overlooked on routine x-rays where the spine is visible, we hope to increase awareness about the importance of considering vertebral fractures in bone health assessment.

The x-rays collected by CaMos are a gold mine that we have just begun to tap.

## Kingston

We have joined forces with Toronto, Hamilton, Saskatoon, Calgary and Vancouver on an in-depth study into the strength of bones using state of the art MRI and CT equipment to get high-resolution pictures of bone. This research will one day allow for a “virtual” biopsy of bone where a bone’s breaking strength could be calculated and a fracture risk could be assigned based on that strength.

We are also interested in the study of proteomics, a new discipline that involves studying the structure and function of proteins, including how they work individually and with each other inside of cells. We are studying the proteins involved in the formation of bone tissue with the aim of identifying if a certain protein is causing osteoporosis.

## Toronto

Our focus is on the relationship between kidney function and bone health.

We know that severely impaired kidney function can lead to bone loss and even fractures, but there is very little data concerning the effects of milder degrees of kidney impairment.

We studied data from CaMos to look at changes in bone mineral density at the hip and spine over 5 years in men and women 50 years of age and older. We found that even among those with modestly impaired kidney function there was bone loss, highlighting the importance of considering even mild impairment of kidney function as a risk factor for bone loss.

Future research will include determining if impaired kidney function is associated with increased fractures and excess vessel wall hardening.

## Hamilton

CaMos has helped to shape our current understanding of osteoporosis and it is important to make sure that we continue to make great strides in this area of study.

In Hamilton, our focus is on learning and knowledge transfer. We work closely with students who are earning their Masters and PhD degrees in areas related to the study of bone health.

Students have used CaMos data to study very important

issues like quality of life, ways to improve the care Canadians receive after they have a fracture, the importance of studying bone quality in addition to bone density, testing alternate diagnostic equipment, and validating new tools to better determine fracture risk and increase fracture prevention.

## Saskatoon

In addition to collaborating on many projects, our site is focused on studying the ultrasound data collected.

Ultrasound machines use probes to send sound waves into the body. When these sound waves reach an organ, bone or denser tissue they bounce back to the probe, creating an echo. The echoes are analyzed by a computer and then transformed into pictures of the organ or tissue being examined.

During follow-up testing years of CaMos, in addition to the bone density scans and x-rays, ultrasounds were done on the finger, wrist, and lower leg. In Saskatoon, we are currently studying all of the results to see if ultrasound can be used to better predict if an individual is at increased risk for fracture.

## Calgary

We need vitamin D to absorb calcium from food and to build and repair bones. Recent studies have shown that low levels of vitamin D can lead to all sorts of significant health issues such as osteoporosis, multiple sclerosis, cancer, diabetes and cardiovascular disease.

For many Canadians, maintaining adequate levels of vitamin D can be challenging especially during Fall and Winter months when the sun’s rays are not strong enough for our bodies to make vitamin D when sunlight touches our skin.

In Calgary, our research interests have been in the areas of normal and abnormal skeletal and calcium metabolism. We are presently collaborating with other CaMos investigators and scientists at the Public Health Agency of Canada on an important research project on vitamin D in the Canadian population.

## Vancouver

Our research is mainly focused on analyzing data provided by the women participating in CaMos.

Through comparisons between bone density test results and reported oral contraceptive use we have found that on average, past oral contraceptive users have lower bone density. We plan to analyze the data further to see if there are changes over time with use and change in use of the contraceptive pill.

We have studied and will continue to study bone density and fracture risk both before and after a woman’s final menstrual period, including the possible effects of associated sleep problems and night sweats. In addition, we have also looked at the effects of weight cycling and physical activity and done studies to look at how specific groups of people differ from the general population. ♦

## CaMos Publications 2009

There were a record number of publications in medical journals in 2009 that used CaMos data. What follows is a very brief summary of all of the articles. If you are interested in reading more, you can find a link to the full articles on our website: [www.camos.org](http://www.camos.org).

### **Calcium and Vitamin D intakes in an adult Canadian population.** (Can J Diet Pract Res.; 70(1):21-27) by *Suzette Poliquin*, Montreal

This paper looked at the calcium and vitamin D intake of the average Canadian, by consulting the diet and supplement information provided by the CaMos participants.

We found that while women and men aged 25-50 reported an average calcium and vitamin D intake close to the recommended level, those over 50 years of age averaged below the recommended intake of calcium and vitamin D.

### **Nitrate use and changes in bone mineral density: the Canadian Multicentre Osteoporosis Study** (Osteoporos Int.; 20: 737-744) by *Sophie Jamal*, Co-director, Toronto

This study looked at participants who were taking organic nitrate (a medication for heart disease), and compared them to participants who were not taking it to see whether there was a link between nitrate use in men and women and changes in their Bone Mineral Density (BMD).

We found that there was a significant increase in the BMD for both men and women who reported using nitrates when compared to those who were not.

### **The impact of incident fractures on health related quality of life: 5 years of data from the Canadian Multicentre Osteoporosis Study.** (Osteoporos Int.; 20:703-714) by *Alexandra Papaioannou*, Co-Director, Hamilton

We used data from the first 5 years of follow-up from the CaMos study and looked at the reported Health-Related Quality of Life for participants who reported a fracture and compared it with participants who had not.

Our results indicated that both men and women who have hip or spine fractures and women who have rib fractures reported a sustained negative impact in their quality of life, while arm fractures appeared to have less of an effect.

### **Repeat low-trauma fractures occur frequently among men and women who have osteopenic bone mineral density** (JBMR; 24(9):1515-22) by *Lisa Langsetmo*, Fellow, Montreal.

We studied all the fragility fractures reported during the first 8 years of follow up. The fractures were then classified as either first or repeat fractures and were divided into risk categories.

# YOUTH ZONE

## YOUTH STUDY

We are happy to announce that the youth section of CaMos (participants aged 16 to 24) has been completed.

The primary focus of this smaller study was to determine when peak bone density (the point when bone is believed to be the strongest) was reached because results from the main study suggested that peak bone density was being reached at an earlier stage than previously thought.

The youth study took place over a period of 4 years, during which time they were asked to answer questionnaires and have multiple bone density tests.

The results showed us, among other things, that peak bone density is indeed occurring at an earlier age than 25.

We would like to thank the youth for their valuable contributions to CaMos. ♦

The risk of repeat fractures was at least double the risk of first fractures in each age group. We also found that after single fracture, the risk of future fracture is much higher, regardless of initial BMD. Finally, participants who had prior fracture and low BMD were at the greatest risk of future fracture.

### **Association Between Change in Bone Mineral Density (BMD) and Fragility Fracture in Women and Men.** (JBMR; 24:361-370) by *Claudie Berger*, CaMos statistician, Montreal

We looked at CaMos participants between the ages of 50 and 85 and compared the BMD of men and women who were taking antiresorptive drugs (osteoporosis medications) and those who were not. We found that, in nonusers of antiresorptives, when BMD was decreasing over time, the risk of fragility fracture was increasing.

As a large number of fractures occur in people who have a BMD that falls in the osteopenic range, our results suggest that a single bone density test is not enough to predict fracture risk, rather, the change over time in BMD should be included along with other risk factors when considering treatments and prevention.

(see CaMos Publications, page 4) ►

**Vertebral Fracture Status and the World Health Organization Risk Factors for Predicting Osteoporotic Fracture Risk.** (JBMR.; 24(3)495-502.) by Peiqi Chen, Senior Research Scientist at Eli Lilly

We looked at the spinal x-rays of participants over the age of 50 to identify spinal fractures in order to evaluate the importance of spinal fractures when assessing the risk of future fractures.

We then combined x-ray data along with the World Health Organization (WHO) risk factors, which excludes spinal fractures.

We found that looking at the risk factors alone, without considering the spinal x-ray data led to either over or under-estimating the true fracture risk.

**Relation between fractures and mortality: results from the Canadian Multicentre Osteoporosis Study.** (CMAJ; 181(5):265-71) by George Ioannidis, Health Research Methodologist, McMaster University

This study was conducted to evaluate the relation between fractures and mortality, in women and men 50 years and older.

Our adjusted results demonstrated that those with hip or spinal fractures were at increased risk of death; these differences were similar for both men and women.

Because our results showed that these fractures tend to be the start of a progressive decline in health, it is important that greater precautions be taken to reduce these kinds of fractures. ♦

## REGIONAL NEWS

Congratulations to Suzette Poliquin on her new appointment to Québec's Health Technology Assessment and Health Intervention Agency. We are also delighted that she will remain as a consultant to CaMos over the coming year and would like to thank her for her valuable contributions to this year's newsletter.

We would like to express our congratulations to the following CaMos investigators who received awards for their unfailing commitment to producing quality research in the field of bone health:



**Dr. Alexandra Papaioannou**

### Hamilton

Endowed chairs and professorships carry a high level of academic distinction and in April of 2009, Dr. Alexandra Papaioannou (centre co-director of the Hamilton CaMos site) was named for a five-year term as the endowed Eli Lilly Canada Chair in Osteoporosis at McMaster University.



**Dr. Jacques Brown**

### Quebec

Dr. Jacques Brown (Québec City centre director) was awarded with the National Order of Quebec in June, 2009. Jacques Brown is a Rheumatologist and a well-known Canadian authority in metabolic bone diseases. His major research interests include Paget's disease of bone and osteoporosis.



**Dr. David Goltzman**

### Montreal

In June, Dr. David Goltzman (CaMos co-principal investigator) received the 2009 Gerald D. Aurbach Award Lecture. This annual award recognizes the outstanding contributions to endocrinology that Dr. Goltzman has made over his 30-year career.

### Editorial Team

Claudie Berger  
Silvia Dumont  
Shannon Gale  
Suzanne Godmaire

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### Your Regional Centres

**Calgary, AB**  
(403) 220-8236

**Halifax, NS**  
(902) 473-5725

**Hamilton, ON**  
(905) 521-2100  
ext 77709

**Kingston, ON**  
(613) 533-6027

**Québec, QC**  
(418) 626-4141  
ext 47520

**Saskatoon, SK**  
(306) 933-2663

**St. John's, NFLD**  
(709) 777-6270

**Toronto, ON**  
(416) 864-5391

**Vancouver, BC**  
(604) 875-5928