Osteoporosis Canada
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COPING
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Remember: You can live well with osteoporosis!

Fracture Risk Assessment and the Role of Bone Mineral Density Testing

In this issue

Fracture Fact:
As of September 11, 19,571,278 individuals worldwide have used the FRAX tool for fracture risk assessment since June 1, 2011 (FRAX website)

In 1993, osteoporosis was defined as a potentially crippling disease characterized by low bone mass, deterioration of bone tissue and compromised bone strength, leading to increased bone fragility and risk of fracture. In 2004, the definition was revised by the National Institutes of Health (NIH) in the United States as follows: "A skeletal disorder characterized by compromised bone strength predisposing a person to an increased risk of fracture." Bone strength refers to a combination of bone density and bone quality.

Bone mineral density testing has been used for many years to assist in the diagnosis and management of osteoporosis.

What is a bone mineral density test?

The BMD test is a painless and safe test that takes approximately 15-20 minutes. The technologist will greet you and escort you to the room where she/he will review a list of questions with you. These questions are related to your bone health and are important in determining your fracture risk, so try to be as accurate as possible with your answers.

The technologist will have you lie on a bed while an x-ray beam called a dual energy x-ray (DXA) passes from below through the bone and soft tissue. A mechanical arm passes over your body capturing the information. The results are then printed. The amount of radiation from the test is extremely low - much less than a chest x-ray. It is actually about the same amount you would be exposed to on a flight from Vancouver to Toronto. Bone density is usually measured at the spine and hip because these are common sites of the most devastating osteoporotic fractures, and in addition, the health of the hip and spine is a good predictor of overall bone health.

In order to monitor a patient's response to treatment, it is important to be able to reproduce the test, and DXA equipment has this ability. For the best comparison, it is therefore recommended that you return to the same facility and machine for follow-up tests if possible.

How is a bone mineral density test interpreted?

BMD results are expressed in T-scores or Z-scores. The T-score is a statistical comparison of your bone density against that of an ideal young adult who has achieved peak bone mass. The Z-score compares your bone density to that of others of your age and is generally used for those under 50.

The World Health Organization originally defined the following diagnostic categories of osteoporosis based on bone mineral density (as measured by DXA machines) in healthy, postmenopausal white women. The WHO has extended this same definition to men and other ethnic groups.

- Normal bone: T-score at or above -1
- Low bone mass (osteopenia): T-score between -1 and -2.5
- Osteoporosis: T-score at or below -2.5
- Severe osteoporosis: T-score at or below -2.5 and the presence of one or more fragility fracture(s).

What is the role of a bone mineral density test in fracture risk assessment?

Using the WHO definition, people are diagnosed with osteoporosis when they have a T-score at or below -2.5. However, the important clinical consequence of osteoporosis is the increased risk of a broken bone (fracture) and many fractures occur in people whose T-score is better than -2.5, so they do not fit this definition of osteoporosis. Therefore, over the past few years the focus has shifted to fracture risk assessment, which includes bone mineral density testing as well as other risk factors for bone loss and fractures to improve the identification of individuals who are at risk of fracture and may benefit from treatment.

Who should have bone mineral density test?

According to Osteoporosis Canada's 2010 clinical practice guidelines for the diagnosis and management of osteoporosis, everyone age 65 and over should have a bone mineral density (BMD) test.

For men and women aged 50-64, those with the following risk factors should have a BMD test:

- Fragility fracture after age 40
- Spine fracture or low bone mass identified on an x-ray, which may have been taken for another reason
- Parental hip fracture
- High alcohol intake, i.e. three or more drinks per day on average
- Current smoking
- Low body weight (less than 132 lbs. or 60kg; weight loss since age 25 greater than 10%)
- High risk medication use: prolonged glucocorticoid use, aromatase inhibitors for breast cancer, androgen deprivation therapy for prostate cancer
- Medical conditions that can contribute to bone loss
- Rheumatoid arthritis

Now that you have had your BMD test, what happens next?

The results of your BMD test should be used as part of a comprehensive fracture risk assessment. There are two tools available in Canada to conduct a fracture risk assessment. CAROC (Canadian Association of Radiolo-

gists/Osteoporosis Canada) and FRAX (Fracture Risk Assessment Tool). Both tools will provide an assessment of your 10-year absolute fracture risk (low, moderate or high). What do these terms mean? Low means that your risk of a fracture in the next 10 years is less than 10%; moderate that your fracture risk is 10 – 20%; high that your risk of fracture is greater than 20%.

CAROC incorporates the BMD hip T-score, age, sex, fracture history after age 40 and steroid use to determine an individual's 10-year absolute fracture risk. FRAX uses the same risk factors as CAROC but also includes height, weight, family history of hip fractures, smoking, alcohol intake, rheumatoid arthritis and other medical conditions that can cause bone loss. It also provides a separate estimate of the 10-year risk for hip fracture. Even though the FRAX tool includes a more comprehensive list of risk factors, for the majority of people the results are similar. It is a matter of personal preference or convenience as to which tool the healthcare provider uses.

One of the main reasons to have a fracture risk assessment is to determine if you need to be on an osteoporosis medication. If your fracture risk is low, you do not require medication. For those at high risk, there is good evidence that medication will reduce the risk of fractures, and so treatment is recommended. For individuals at moderate risk, your doctor will consider other risk factors to help determine if medication should be started.

Other methods of assessing BMD

Clinics, pharmacies and wellness fairs may offer a heel ultrasound as a way to measure bone density. Ultrasound uses no radiation, is relatively inexpensive, and is portable and quick to do. However, ultrasound is not as reliable a tool as DXA to measure bone density or to monitor response to therapy, and the 2010 clinical practice guidelines recommend DXA as the gold standard.

X-ray is a useful tool for identifying undetected broken bones. It may also indicate low bone density and the need for a bone mineral density test. However, X-ray is not a tool to diagnose osteoporosis.

We Welcome Your Feedback

- Have a question?
- Is there an osteoporosis-related topic that you would like to see featured in the newsletter?
- Looking for a great volunteer opportunity?

Please contact us by calling Osteoporosis Canada's toll-free number **1-800-463-6842** or emailing copn@osteoporosis.ca.

Lindy Fraser Award 2017

Osteoporosis Canada's Scientific Advisory Consultants and Osteoporosis Canada would like announce this year's Lindy Fraser Award winner as chosen by the members of the SAC.

Osteoporosis Canada established this award in 1993 to recognize individuals who have made an outstanding contribution to the field of osteoporosis research and education in Canada. The award is named in honour of Lindy Fraser, who in 1981, at the age of 87, started the first self help group for people with osteoporosis. She herself was an inspiration to others as she shared her struggle to get out of bed, into a wheelchair, then to

walk again with a cane. In 1982, she answered a call from a small group in Toronto to take part in the first national symposium on osteoporosis. That appearance was the spark that gave rise to Osteoporosis Canada.

Dr. Suzanne Morin (left), Dr. Stephanie Kaiser

This year's award winner has shown immeasurable dedication and determination in the collaborative effort to achieve the common vision of Canada without osteoporotic fractures. Osteoporosis Canada is happy to recognize Dr. Stephanie Kaiser as the 2017 Lindy Fraser Award Winner.

Dr. Stephanie M. Kaiser is the Head of the Division of Endocrinology and Metabolism at the Queen Elizabeth II Health Sciences Centre and Professor of Medicine at Dalhousie University in Halifax, Nova Scotia.

Dr. Kaiser is Past President of the Canadian Society of Endocrinology and Metabolism (CSEM), she chaired the Specialty Committee for Endocrinology and Metabolism of the Royal College of Physicians and Surgeons of Canada and then sat on the nucleus committee for an additional 6 years until June 2016. She was a co-author of the Osteoporosis Guidelines in 2002 and again in 2010, and she is also a co-investigator for the Canadian Multicentre Osteoporosis Study. Dr. Kaiser has over 50 publications in peer-reviewed journals.

Dr. Kaiser was the recipient of the CSEM 2009 Educator of the Year Award and was awarded the Queen Elizabeth II Diamond Jubilee Medal for her work in osteoporosis in 2012.

Dr. Kaiser has been a longstanding member of the Scientific Advisory Council for Osteoporosis Canada, and has worked on numerous OC publications and committees, currently being the co-chair of the new Knowledge Translation Committee and a member of the Executive Committee. In the past, she has chaired the development committee and sat on the guidelines committee.

Congratulations Dr. Kaiser!

FUNNY BONE:

There are five stages in the life of an actor: Who's Mary Astor? Get me Mary Astor. Get me a Mary Astor type. Get me a young Mary Astor. Who's Mary Astor? – Mary Astor

BONE *MATTERS*

Take charge of your bone health

Are you concerned about if cancer and cancer therapies might affect bone health?

Join us for our next **Bone *Matters*** presentation with Dr. Rowena Ridout on the topic of Osteoporosis and Cancer. Dr. Ridout will discuss the potential links between cancer therapies, bone health and fracture risk, as well as practical strategies and tips for cancer patients on how to reduce their risk of bone loss and fractures.

This presentation will air on **Tuesday, October 3, 2017** at **1:00 PM ET**

For more information and to register, please visit: http://www.osteoporosis.ca/osteoporosis-and-you/copn/virtual-forum/#cancer

A Recipe from our Sponsor

Mexican Squash and Bean Salad

Course: *Salads*
Preparation Time: 20 *mins*
Cooking Time: *25 mins*
Yields: 4 *servings*

2/3 milk product serving(s) per person

Calcium: 32% DV/ 349 mg

Sweet squash and black beans simmered with chili, oregano and tomatoes on top of crispy greens make for a satisfying and tasty main course salad with the bonus of plenty of fibre. The zesty lime yogurt dressing and cheese complement this dish perfectly. For added crunch, make some baked tortilla chips to add on top of the salad or as a side.

For more information about this recipe:
https://www.dairygoodness.ca/getenough/recipes/mexican-squash-and-bean-salad

Ingredients

1 tbsp (15 mL) **butter**
1 small onion, chopped
2 cloves garlic, minced
1 tbsp (15 mL) chili powder
1 tsp (5 mL) dried oregano
Salt and pepper
1 1/2 cups (375 mL) diced (1/2 inch/1 cm pieces) fresh or frozen butternut squash, thawed
1/2 cup (125 mL) water
1 1/2 cups (375 mL) canned no-salt-added diced tomatoes with juice
1 cup (250 mL) cooked or drained and rinsed canned unsalted black beans
1/2 cup (125 mL) frozen corn kernels, thawed
2 small corn or whole wheat tortillas
1/2 to 1 tsp (2 to 5 mL) grated lime zest
1 1/2 tbsp (22 mL) freshly-squeezed lime juice, divided
1/2 cup (125 mL) **plain Greek yogurt**
1 cup (250 mL) shredded **Mozzarella**
8 cups (2 L) torn romaine lettuce
1 cup (250 mL) cherry tomatoes, cut in half
Chopped fresh cilantro (optional)

Preparation

Preheat oven to 350°F (180°C). Line a large baking sheet with parchment paper.

In a large skillet, melt butter over medium heat. Sauté onion, garlic, chili powder, oregano, 1/8 tsp (0.5 mL) salt and 1/4 tsp (1 mL) pepper for about 2 minutes or until onion starts to soften. Add squash and sauté for 1 minute or until onion is soft. Stir in water. Cover and boil for 5 minutes.

Stir in canned tomatoes, beans and corn. Reduce heat to medium-low, cover and boil gently, stirring occasionally, for about 15 minutes or until squash is soft.

Meanwhile, cut each tortilla into 12 thin wedges. Arrange in a single layer on prepared baking sheet. Bake in preheated oven for 8 to 10 minutes or until golden and crisp. Set aside.

In a small bowl, stir lime zest and 1/2 tbsp (7 mL) lime juice into yogurt and season with a pinch each of salt and pepper.

Remove squash mixture from heat. Stir in remaining lime juice and half of the shredded cheese until melted. Season to taste with pepper and up to 1/8 tsp (0.5 mL) more salt.

In a large bowl, combine half of the lime yogurt and lettuce; toss to coat. Divide lettuce among serving plates. Spoon squash mixture on top of salad and top with remaining shredded cheese and grape tomatoes. Dollop with remaining lime yogurt, top with baked tortilla chips. Sprinkle with cilantro (if using).

Tips

To save time, look for pre-cut, peeled butternut squash in the produce section of the supermarket (you might have to cut in into smaller pieces) or diced frozen squash in bags in the frozen foods section; let it thaw and drain off excess liquid before adding to the skillet.

To cook beans from dried, you'll need to soak 1/2 cup (125 mL) dried beans overnight, then cook according to package directions until tender. If using canned beans, you'll need about two-thirds of a 14 oz (400 mL) can or half of a 19 oz (540 mL) can. Look for those with no salt added or as low in sodium as possible. Strain the liquid from the beans and rinse under cold, running water, then drain well.

For an extra punch of flavour, add 2 tbsp (30 mL) canned diced green chilies or drained pickled jalapeno peppers with the canned tomatoes.

If you like extra heat, use a Monterey Jack or Havarti with hot peppers and add some hot pepper sauce to the squash with the lime juice, or season to taste with hot pepper sauce at the table.

Nutrition Tip

Make room in your fridge to store lunch box items: slices of cheese or cheese sticks, single serving containers of yogurt, etc.

This issue of COPING is sponsored by Dairy Farmers of Canada

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These newsletters are not intended to replace individualized medical advice. Readers are advised to discuss their specific circumstances with their healthcare provider.