

## INTERPRETING THE CAROC/FRAX RESULTS

### Low Fracture Risk (< 10%)

In those individuals at low risk, the risk of a fracture over the next 10 years is less than 10%. In other words, without any osteoporosis medications, there is at least a 90% chance of surviving the next 10 years without suffering a single broken bone. This group of patients does not need treatment with prescription osteoporosis medications.

### High Fracture Risk (> 20%)

In those individuals at high risk, the risk of a fracture over the next 10 years is greater than 20% if left untreated. This group of patients does require prescription osteoporosis medication regardless of their BMD test results.

### Moderate Fracture Risk (10-20%)

In those individuals at moderate risk, the risk of fracture lies between 10 and 20% over the next 10 years. In

this situation, further assessment is needed to determine whether prescription treatment will be necessary. This is done by taking into consideration some additional factors to see if that individual will be bumped up to the high risk level. These additional factors include:

- An X-ray of the spine to rule out an asymptomatic (painless) spine fracture
- A spine BMD measurement that is very much lower than the hip BMD measurement
- An unusually rapid loss of BMD over time
- Frequent falls or poor balance
- Other factors as determined by a physician

In those individuals who have a BMD T-score measurement of -2.5 or below at the hip or at the spine, the fracture risk is automatically considered to be moderate. A BMD of -2.5 or below should prompt an assessment of the above additional factors.

## MANAGING BONE HEALTH

The goal of Osteoporosis Canada is to maintain healthy bones and to help individuals prevent fragility fractures. By successfully identifying individuals at high fracture risk and treating them with effective medications, we can succeed in making this goal a reality. The CAROC and FRAX tools provide us with accurate estimates of an individual's absolute 10-year risk of fracture. Talk to your physician or nurse practitioner to see if you need a comprehensive fracture risk assessment to keep your bones healthy, strong and fracture-free.

# OSTEOPOROSIS

## DIAGNOSIS

*The Importance of a Comprehensive Fracture Risk Assessment*

Osteoporosis is a disease that takes years to develop without any warning symptoms or signs. Bone mineral is gradually lost, making the bones weaker and more prone to fracturing or breaking. These fractures usually happen in the hip, spine, wrist or shoulder, and they are called fragility fractures to indicate that the bone has broken because it has become more fragile.

Because the first warning sign of osteoporosis is frequently a fracture, it is often called "the silent thief" as it literally steals bone mass without giving any indication of doing so whatsoever, until a fracture occurs.

A fragility fracture is one that occurs spontaneously or easily from a simple activity such as reaching, bending, twisting, coughing or sneezing. It can also occur following a minor injury such as a fall from a standing height or less at walking speed or less. Fractures do not normally occur in these situations in people with healthy bones. Fragility fractures represent the vast majority of all fractures in women and men age 50 and over. These can have devastating health consequences including pain, decreased quality of life, loss of independence and even death. A fragility fracture also increases a person's risk for future fragility fractures.



However, osteoporosis treatments can significantly decrease a person's risk of experiencing a fracture. It is therefore critical that we determine a person's fracture risk, because treatment of high risk patients can prevent such devastating fractures before they occur.

## THE REVOLUTIONARY CONCEPT OF FRACTURE RISK

Rather than relying solely on the results of a bone mineral density (BMD) test to make treatment decisions for osteoporosis, Osteoporosis Canada recommends combining the results of BMD testing with some very important clinical risk factors. This leads to a much better and more accurate method of predicting a person's risk of

fracture. As a result, the treatment of osteoporosis has now shifted from just treating BMD test results to treating people with a high fracture risk.

If we use the analogy to cholesterol testing, the risk of a heart attack is not determined based on cholesterol level alone. Other important clinical risk factors, such as the presence of diabetes, smoking and family history of heart disease, are all taken into consideration when a physician determines a person's overall risk of heart disease. One can have a normal cholesterol level and yet have a high risk of heart disease if other risk factors are present.

Similarly, a comprehensive fracture risk assessment is not based on BMD test results alone. Some persons who have a low BMD test result may not be at high risk of fracture, despite the low BMD. On the other hand, there are those who have a fairly good BMD test result, but because of other important clinical risk factors, their overall fracture risk is high.

A comprehensive fracture risk assessment will lead to a much more accurate determination of a person's need for prescription osteoporosis medication. BMD testing is just one element of a comprehensive fracture risk assessment and does not solely determine a person's risk of fracture.

# OSTEOPOROSIS



Make your  
**FIRST** break  
your **LAST**

**INSIST ON ASSESSMENT**

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To contact the Canadian Osteoporosis Patient Network, email [copn@osteoporosis.ca](mailto:copn@osteoporosis.ca)

The information contained in this fact sheet is not intended to replace medical advice. Readers are advised to discuss their individual circumstances with their physician.

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## WHO IS AT HIGH FRACTURE RISK?

Some people are at high fracture risk. This is the case for persons over age 50 with one or more of the following criteria:

- have had a *spine* (vertebral) fracture
- have had a *hip* fracture
- have had *two or more* fragility fractures (excluding fractures of the skull, hands, feet and ankles)
- have had one or more fragility fracture AND are also currently taking glucocorticoid drugs (e.g. prednisone)
- are at high fracture risk based on a comprehensive fracture risk assessment utilizing tools such as CAROC or FRAX, which are explained below.

Such individuals should take treatment for osteoporosis regardless of their BMD test results. However, they should still have a BMD test in order to monitor their response to treatment (to see if their treatment is working well).

## COMPREHENSIVE FRACTURE RISK ASSESSMENT TOOLS (CAROC AND FRAX)

Osteoporosis Canada focuses on estimating an individual's 10-year absolute fracture risk; that is, the probability of experiencing a fracture over the next 10 years. Although the BMD test is a very important component of the fracture risk assessment, it is not the only aspect that needs to be considered.

Canada has two different tools, both of which provide very accurate estimates of fracture risk. They divide patients into 10-year LOW, MODERATE and HIGH fracture risk categories. Having two tools allows flexibility for Canadian doctors to use the tool that works best in their own work environment.

Technically speaking, CAROC and FRAX give a fracture risk estimate for persons who are not taking a prescription osteoporosis medication. For those on prescription medication, the CAROC and FRAX fracture risk estimates may have to be further adjusted by their healthcare provider.

CAROC and FRAX use the hip BMD results because research has shown that the hip BMD is by far a much better predictor of future fracture risk than the spine BMD.

## CAROC CALCULATOR

CAROC uses one graph/chart for men and a different one for women. This simple tool uses age, sex and hip BMD to identify a preliminary fracture risk. That risk is bumped up by one level of risk for individuals who have had a fragility fracture and for those who are currently on steroid medication (e.g. prednisone). A person who has had a fragility fracture AND is currently on prednisone is automatically considered to be at high risk regardless of their BMD test results and should receive treatment.

## FRAX CALCULATOR

FRAX uses the same risk factors as CAROC, but it also uses other risk factors including height, weight, family history of hip fracture, smoking, alcohol and rheumatoid arthritis, which can also contribute to a person's estimation of fracture risk.

Although CAROC is less comprehensive than FRAX, for the majority of people, the results are the same regardless of which of these tools is used. Therefore the choice of FRAX or CAROC by your doctor will be a matter of personal preference and convenience.

## THE SPECIAL CASE OF SPINE (VERTEBRAL) FRACTURES

Many spine fractures are asymptomatic (i.e. painless) and many people are not even aware that they have had one. One important clue that a spine fracture may be present is the loss of height.

Everyone loses a bit of height with age. So, how much is too much? When height is measured on an on-going basis by a healthcare professional, a loss of 2 cm (3/4 inch) or more is significant and could be a warning sign that a spine fracture is present.

For those who have not had their height followed by a healthcare professional,

they can compare their current height measurement to their recollection of their height when they were a young adult. If they have lost 6 cm or more (2½ inches), this could be a warning sign that a spine fracture is present.

If you have lost height according to one of the definitions above, a regular X-ray of your spine will help determine whether or not your height loss is due to an asymptomatic spine fracture. If a spine fracture is found on X-rays, you are automatically at high fracture risk and you need osteoporosis treatment regardless of your BMD test results.

## WHO NEEDS A BMD TEST?

When used in combination with important clinical risk factors, a Bone Mineral Density (BMD) test can help determine your fracture risk and assist your physician in making decisions about your treatment. A BMD test is safe, painless and accurately measures the density of bones.

## WHO SHOULD HAVE A BMD TEST?

- All women and men 65 years or older
- All women and men between the ages of 50 and 64 with any of the following risk factors for fracture:
  - A previous fragility fracture that occurred after the age of 40
  - Current smoker
  - 3 or more alcoholic drinks per day on average
  - A parent who had a hip fracture
  - Rheumatoid arthritis
  - Current use of certain medications (e.g. steroids or prednisone, or some medications used for breast or prostate cancer)
  - A low body weight (less than 132 lbs or 60 kg)
  - A weight loss of more than 10% since the age of 25
  - Other medical conditions that can contribute to osteoporosis such as an early menopause (before age 45), low testosterone levels in a man, celiac disease, gastric bypass surgery, or chronic liver disease. Concerns about secondary causes should be discussed with your doctor.

*BMD testing is not usually recommended in younger men or women (under age 50) unless there is a medical condition predisposing them to osteoporosis or when there are unexplained fragility fractures.*

**If you qualify for a BMD test, then you also qualify for a comprehensive fracture risk assessment using the CAROC or FRAX calculation tools.**