Current Osteoporosis Canada Guidelines

This department covers selected points from the 2011 Canadian Endocrine Update: A CME Day from the Division of Endocrinology and Metabolism at McMaster University and the University of Western Ontario, Hamilton, Ontario.
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Introduction

In the past decade, an important paradigm shift has occurred in the management of osteoporosis patients. The aim of therapy is to reduce the risk of future fractures and fracture-associated mortality, and, while low bone density contributes significantly to this risk, there are other key factors that must be taken into consideration for appropriate risk stratification. Currently, there exists a care gap amongst high risk patients, where fewer than 20% of women and fewer than 10% of men who have had a previous fracture receive therapy to prevent future fractures.[1,2] The new 2010 OSC guidelines focus on the importance of fragility fractures in identifying and treating high risk patients.[3]

Defining Fragility Fractures

A fragility fracture is a fracture that occurs spontaneously or with minor trauma, such as a fall from standing height or less.[1] Fragility fractures do not include craniofacial fractures or fractures of the hand, ankle, or foot. Fractures are important, as they result in an increase in mortality of approximately 20%. This mortality is realized within the first year after a hip fracture and occurs within five years of a spine fracture.[4]

Fragility fractures constitute the majority of fractures (approximately 81%) in postmenopausal women after the age of fifty.[1]

Fractures affect mortality, morbidity, and mobility and are associated with chronic pain. Low bone density is a major risk factor for fragility fractures; however, the majority of such fractures occur in people with a bone density in

Table 1
1994 Definitions Based on BMD[5]

Status	T-score
Normal	+2.5 to –1.0 (inclusive)
Osteopenia (Low Bone Mass)	Between –1.1 and –2.4 (inclusive)
Osteoporosis	–2.5
Established (Severe) Osteoporosis	–2.5 + fragility fracture

Table 2
Risk Factors for Fracture

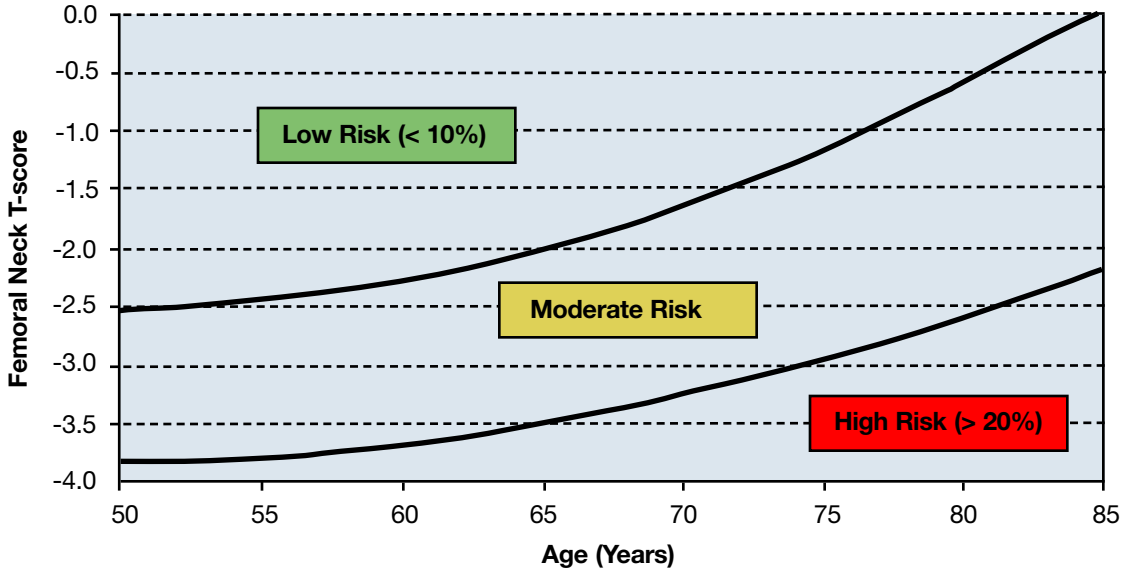
- Fragility fracture after the age of 40
- Glucocorticoid use (more than or equal to 7.5mg/day for three months or longer in the prior year)
- Parental history of hip fracture
- Premature menopause
- Lifestyle factors (smoking, excessive alcohol, physical inactivity)
- Weight loss since age 25 by more than 10%
- Poor nutrition with inadequate calcium and vitamin D intake
- Recurrent falls

the osteopenic range (-1 > T-score > -2.5).[6,7] It is, therefore, important to integrate bone density with other important risk factors for fracture in order to appropriately identify patients who stand to benefit from therapy. Table 2 lists the important risk factors for fracture.

Risk Assessment Tools

Absolute fracture risk tools have been developed, enabling the physician to identify the absolute fracture risk in patients. Absolute fracture risk projected over ten years can be categorized as low (less than 10%), moderate (10 to 20%) or high (more than 20%).[8]

Figure 1
10-year Risk Assessment for Women (CAROC Basal Risk)



There are two tools that are recommended in Canada and quantify fracture risk:

1. CAROC — this tool is a joint initiative of the Canadian Association of Radiologists and Osteoporosis Canada
2. FRAX (Fracture risk assessment tool) — this tool was developed by the World Health Organization

Fracture rates differ from country to country. For instance, the lifetime fracture risk for a woman at the age of fifty is approximately 28% in Sweden, only 2.5% in China, and 12% in Canada.[9] Given this variation, the tool adopted for risk assessment should be country specific. For Canada, the recommended tools are CAROC and FRAX, as both have been validated in the Canadian population.

The CAROC tool determines the fracture risk based on the femoral neck T-score and the age of the patient. This risk is modified by the presence of two other key factors:

1. A fragility fracture after age 40
2. Recent prolonged glucocorticoid use (defined as ≥ 7.5 mg of prednisone daily for ≥ 3 months, in the past year)[8]

Glucocorticoid use increases the fracture risk by one category (low to moderate or moderate to high).[8]

A prior vertebral or hip fracture automatically places the patient in the high risk category. However, other types of fragility fractures only increase the fracture risk by one category (*e.g.*, low to moderate, or moderate to high).

In contrast to the CAROC tool, the FRAX tool also includes additional risk factors, including parental hip fracture history, current smoking, high alcohol intake, and the presence of rheumatoid arthritis.[10]

The CAROC tool and the FRAX tool are similar in their abilities to predict a future fracture, and, hence, current guidelines advise the use of either tool based on personal preference or convenience.

In spite of their utility in risk stratification, these tools are not without their limitations. CAROC and FRAX are only useful for fracture prediction in patients who are not receiving therapy. These tools do not possess the sophistication to account for the impact of therapy on fracture risk. Furthermore, these tools are only applicable in postmenopausal women and men over 50. They may also not capture the increased risk of fracture seen in the presence of comorbidities, such as chronic kidney disease.[3]

Conclusion

Osteoporosis management has significantly advanced in recent years, with greater focus on comprehensive risk assessment in patients to prevent future fractures. Physicians are better able to advise patients about their risk level by providing them with an absolute 10-year fracture risk calculated with CAROC or FRAX, which is more meaningful to patients than a bone density T-score. Dx

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