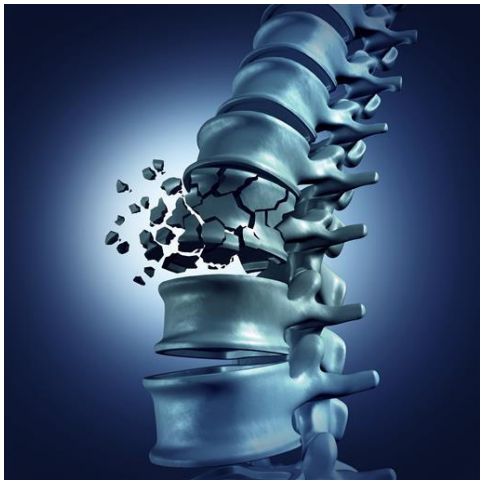
Update on Clinical Guidelines for the Management of Osteoporosis



SUZANNE MORIN MD MSC

DEPT MEDECINE, MCGILL UNIVERSITY

RESEARCH INSTITUTE MCGILL UNIVERSITY HEALTH CENTER

Disclosures

Research Grants paid to Institution: Amgen Canada and Merck

Advisory Board committee honorarium: Amgen Canada

Objectives

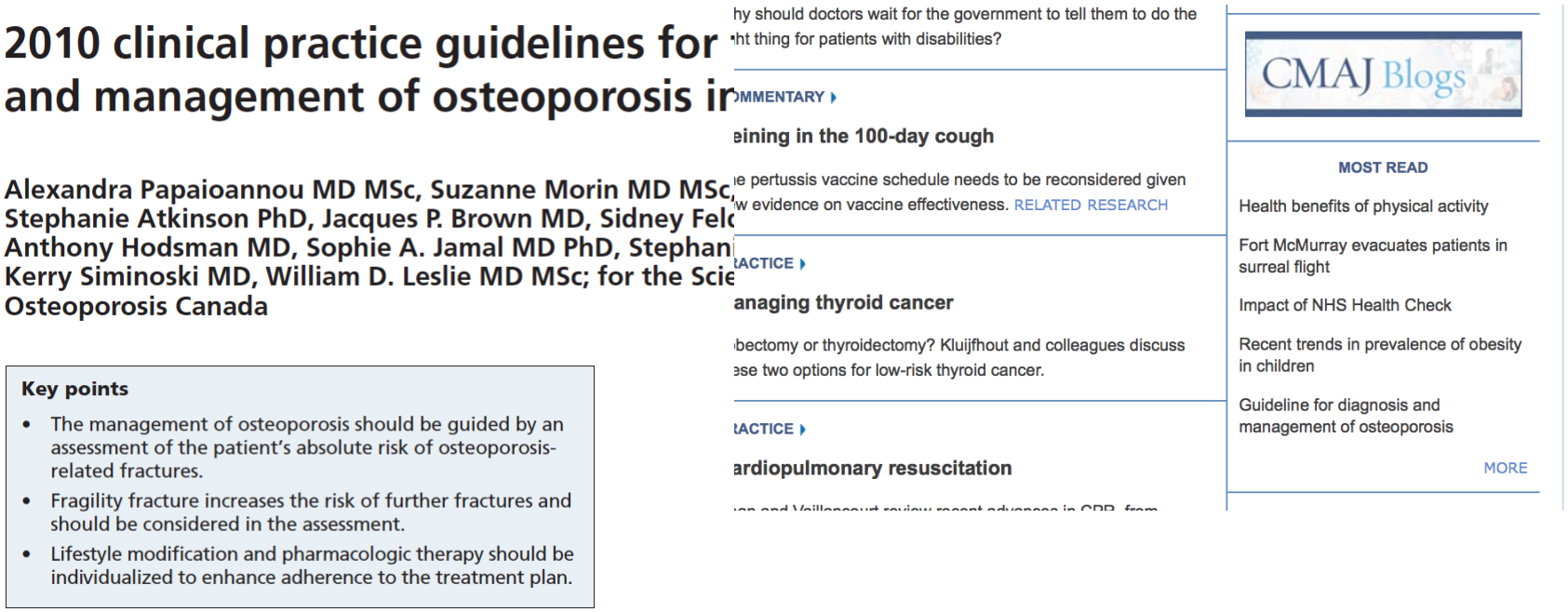
Summarize clinical Canadian guidelines for the management of osteoporosis and prevention of fragility fracture

- Long term care population
- Exercise guidelines for patients with osteoporosis or osteoporotic vertebral fractures
- Vertebral fracture screening guidelines

Review areas of uncertainties in the care of patients with skeletal fragility

Discuss post- fracture care strategies

Clinical Guidelines



2010 clinical practice guidelines for and management of osteoporosis in

Alexandra Papaioannou MD MSc, Suzanne Morin MD MSc, Stephanie Atkinson PhD, Jacques P. Brown MD, Sidney Fel Anthony Hodsman MD, Sophie A. Jamal MD PhD, Stephan Kerry Siminoski MD, William D. Leslie MD MSc; for the Scie Osteoporosis Canada

Key points

- The management of osteoporosis should be guided by an assessment of the patient's absolute risk of osteoporosis-related fractures.
- Fragility fracture increases the risk of further fractures and should be considered in the assessment.
- Lifestyle modification and pharmacologic therapy should be individualized to enhance adherence to the treatment plan.

hy should doctors wait for the government to tell them to do the ht thing for patients with disabilities?

OMMENTARY

eining in the 100-day cough

e pertussis vaccine schedule needs to be reconsidered given w evidence on vaccine effectiveness. RELATED RESEARCH

ACTICE

anaging thyroid cancer

bectomy or thyroidectomy? Kluijfhout and colleagues discuss ese two options for low-risk thyroid cancer.

ACTICE

ardiopulmonary resuscitation

CMAJ Blogs

MOST READ

Health benefits of physical activity

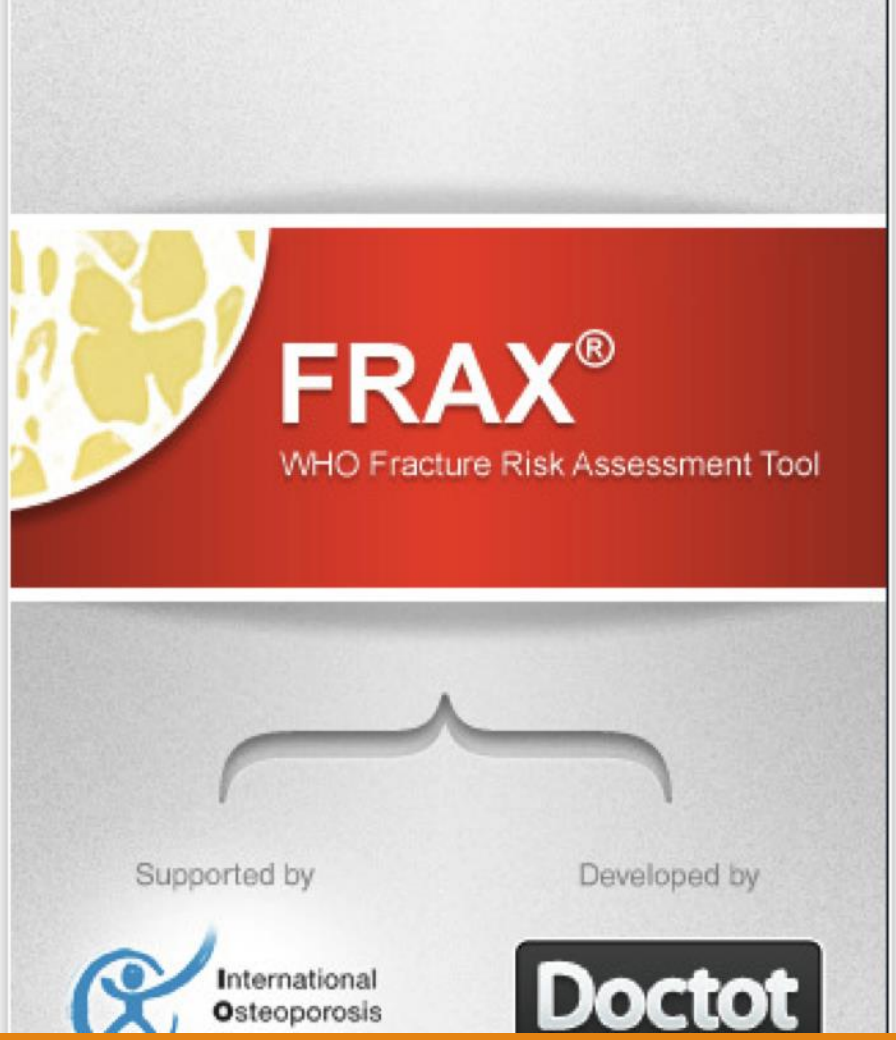
Fort McMurray evacuates patients in surreal flight

Impact of NHS Health Check

Recent trends in prevalence of obesity in children

Guideline for diagnosis and management of osteoporosis

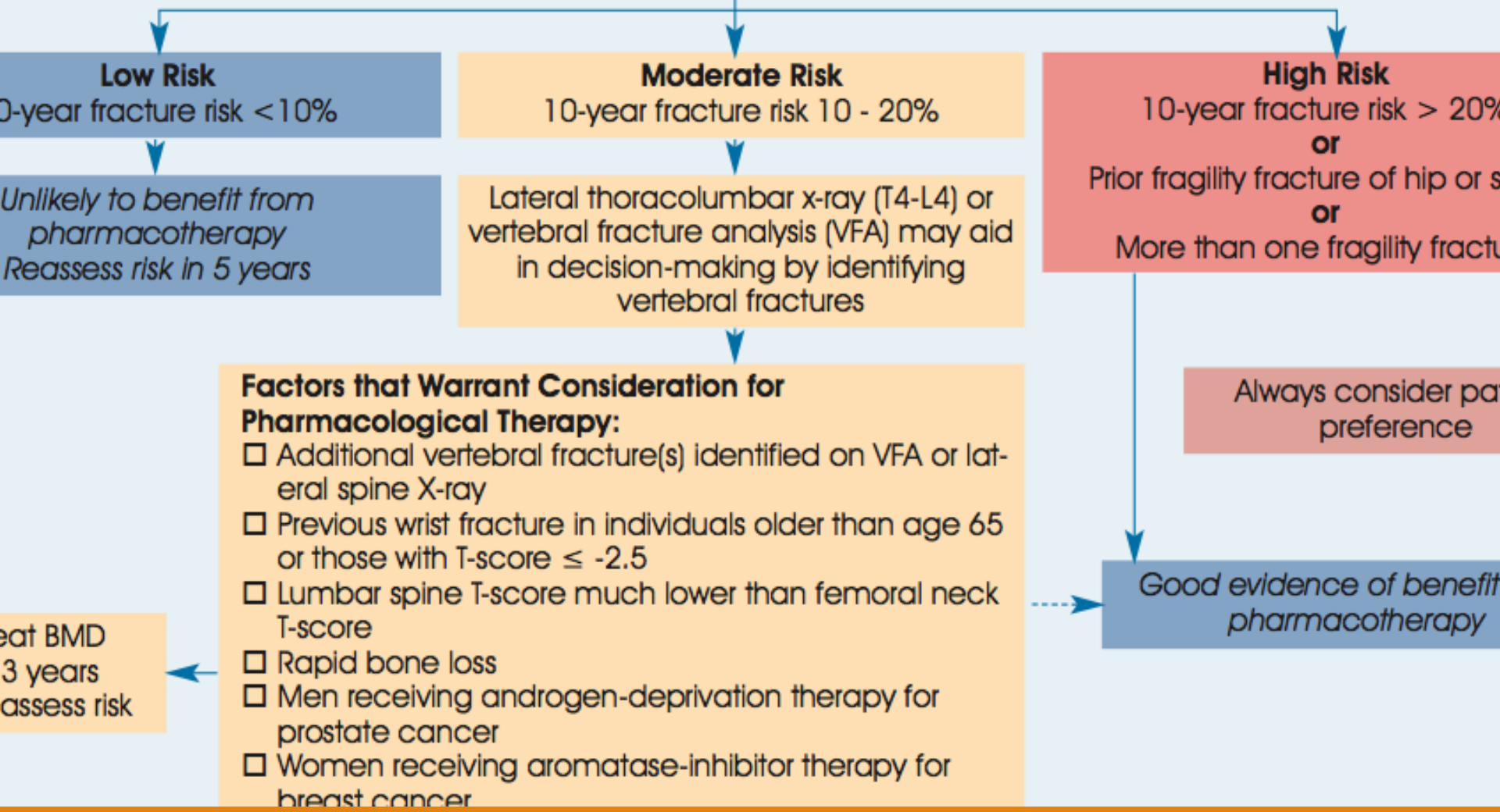
MORE



10 year absolute fracture risk assessment tools

Clinical Risk Factors: sex, age, BMI, prevalent fractures, family history, secondary causes, glucocorticoids , excess alcohol and smoking

in addition to BMD



Treatment targeted to category of Fracture risk

What about the moderate risk group? When do we screen for vertebral fractures?

What about falls?

t Line Therapies with Evidence for Fracture Prevention in Postmenopausal Wome

e of cture	Antiresorptive Therapy						Bon Forma Thera
	Bisphosphonates			Denosumab	Raloxifene	Estrogen** (Hormone therapy)	Teripara
	Alendronate	Risedronate	Zoledronic Acid				
ebral	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	----	✓	--
ebral+	✓	✓	✓	✓	----	✓	✓

1st line pharmacological therapies

How long do we treat?

Drug holidays?

Recommendations- Guidelines

COMPLETED OR ONGOING

Durat[illegible] of bisphosphonate thera[illegible]

Exerci[illegible]

Frail e[illegible]

Verte[illegible] assess[illegible]

Atypical Femur Fracture management recommendations

UPCOMING WORK

Special Populations

Clinical Review

Bisphosphonates for treatment of osteoporosis

Expected benefits, potential harms, and drug holidays

Jacques P. Brown MD Suzanne Morin MD MSc William Leslie MD Alexandra Papaioannou MD Angela M. Cheung MD PhD
Kenneth S. Davison PhD David Goltzman MD David Arthur Hanley MD Anthony Hodsman MD Robert Josse MD
Algis Jovaisas MD Angela Juby MD Stephanie Kaiser MD Andrew Karaplis MD David Kendler MD
Aliya Khan MD Daniel Ngui MD Wojciech Olszynski MD PhD Louis-Georges Ste-Marie MD Jonathan Adachi MD

Canadian Family Physician • Le Médecin de famille canadien | **VOL 60: APRIL • AVRIL 2014**

Exercise Recommendations

Osteoporos Int (2014) 25:821–835
DOI 10.1007/s00198-013-2523-2

CONSENSUS STATEMENT

Too Fit To Fracture: exercise recommendations for individuals with osteoporosis or osteoporotic vertebral fracture

L. M. Giangregorio · A. Papaioannou · N. J. MacIntyre · M. C. Ashe · A. Heinonen · K. Shipp · J. Wark · S. McGill · H. Keller · R. Jain · J. Laprade · A. M. Cheung

Patient-important outcomes

Falls

Fractures

BMD

Pain

HRQL

Function

Adverse Events

Evidence suggests:

Multicomponent exercise programs and balance training can reduce falls

Multicomponent exercise programs may improve BMD

Aerobic exercise alone may not be sufficient for fall or fracture prevention

Too Fit To Fracture Recommendations

For Individuals with Osteoporosis:

- Strong recommendation for multicomponent exercise program that includes resistance training in combination with balance training.
- Recommendation that individuals do not engage in aerobic training to the exclusion of resistance of balance training

For Individuals with Osteoporotic Vertebral Fractures:

- Consultation with a physical therapist is suggested to ensure safe and appropriate exercise
- Strong recommendation for multicomponent exercise program that includes resistance training in combination with balance training.
- Recommendation that individuals do not engage in aerobic training to the exclusion of resistance of balance training

Exercise Prescription

Table 6 Exercise prescription details for older adults with osteoporosis or osteoporotic vertebral fracture

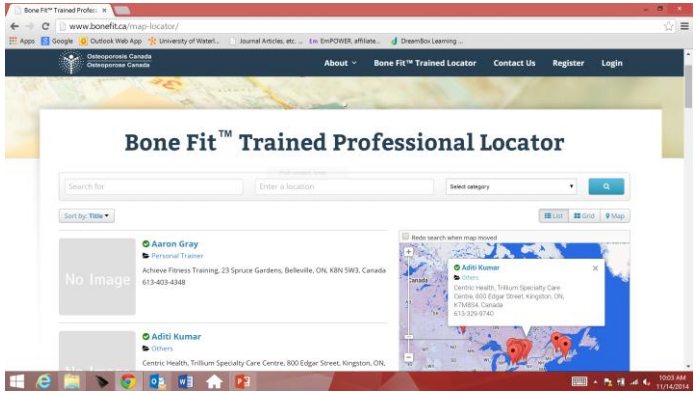
Type	How often per week?	How hard should it be?	Examples	Comments
Resistance training	2 days a week minimum[a]	One exercise for each major muscle group, 2 sets per exercise, 8–12 repetitions maximum[a]: If >12 reps can be performed → too easy If <8 reps → too hard	Exercises that result in work being performed against resistance (e.g., body weight relative to gravity, or external resistance)	Individuals who are previously sedentary, with comorbid conditions that affect activity participation, at high fracture risk or unfamiliar with resistance training may need to train at a lower intensity, at least initially.
Balance training	15–20 min per day, accumulating 2 h per week.	Start with static balance exercises and progress to dynamic	Table 5	Can be performed in short bouts throughout the day, or embedded in daily activities. Consultation with a health care provider on exercise selection and progression is recommended
Aerobic exercise[a,b] (for general health benefits)	3–5 days per week for 30–60 min per day	Moderate to vigorous intensity	Weight-bearing e.g., dancing, walking	Shorter, more frequent bouts (e.g., 10 min at a time) are acceptable and may be preferable for individuals with vertebral fractures, with comorbid conditions that limit activity participation, or who were previously sedentary.
Total exercise time = minimum of 150 min of moderate- or vigorous-intensity exercise per week[a,c]				

Balance training

Table 5 Example balance training exercises that have been used in clinical trial interventions for fall prevention

What is balance training?	Example exercises
Balance training is defined as "… the efficient transfer of bodyweight from one part of the body to another or challenges specific aspects of the balance systems (e.g., vestibular systems)" and balance retraining is defined as "… from the re-education of basic functional movement patterns to a wide variety of dynamic activities that target more sophisticated aspects of balance." http://www.profane.eu.org/taxonomy.html	Reducing base of support in static stance: One-legged stand Tandem or semi-tandem stand Standing on heels only Standing on toes only Shifting weight, moving to limits of stability Shifting weight between heels and toes Dynamic balance exercises Walking on toes only Walking on heels only Tandem walk Figure 8s Sit-to-stand or squat Walking backwards Three-dimensional movement Tai Chi Dancing Additional ways to progress balance challenges Gradually reduce contact with support objects Add weight shifting to activities with reduced base of support Close eyes during static tasks Dual-tasking—doing another activity or mental challenge at the same time

TOOLS for Patients on Osteoporosis Canada's Website: www.osteoporosis.ca/osteoporosis-and-you/too-fit-to-fracture/



Locate professionals in ON, SK, AB, NS, NB.
Or, arrange for a workshop in your town!
www.bonefit.ca

Order one page handout, or download PDF for EMR.
Order or tell patients about FREE booklet.

Tell your patients about 20+ videos on exercise:

- How to do strength and balance exercises
- How to modify golf game
- Incorporating balance training into daily home activities
- Exercises for older adults with higher fall risk, spine fractures

Frail elderly

Recommendations for preventing fracture in long-term care

Alexandra Papaioannou MD MSc, Nancy Santesso RD PhD, Suzanne N. Morin MD MSc, Sidney Feldman MD, Jonathan D. Adachi MD, Richard Crilly BSc MD, Lora M. Giangregorio PhD, Susan Jaglal PhD, Robert G. Josse MBBS, Sharon Kaasalainen PhD, Paul Katz MD, Andrea Moser MD MSc, Laura Pickard MA, Hope Weiler RD PhD, Susan Whiting PhD, Carly J. Skidmore MSc, Angela M. Cheung MD PhD; for the Scientific Advisory Council of Osteoporosis Canada

KEY POINTS

- In older adults living in long-term care (residents), fractures cause pain, agitation, immobility and transfers to hospital.
- Residents identified as being at high risk of fracture include those with prior fracture of the hip or spine, those with more than one prior fracture and those with one prior fracture and recent use of glucocorticoids.
- Recommendations for preventing fracture in long-term care were developed using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach, with consideration of the quality of the available evidence, the balance between benefits and harms, the preferences of residents and their care providers, and the resources required to implement the recommendations.
- Strategies to prevent fractures, including vitamin D and calcium supplementation, use of hip protectors, exercise, multifactorial interventions to prevent falls and pharmacologic therapies, should be tailored to each resident's level of fracture risk, mobility, life expectancy, renal function and ability to swallow.

Goal of Fracture Prevention

Fractures are associated re-fracture, decreased quality of life, long term care admissions and mortality

Guidelines apply to individuals who have a life expectancy of one year or more.

Residents at high risk for fractures

Box 1: Factors indicating high risk for fracture*

Residents in long-term care with any one of the following factors:

- prior fracture of the hip or spine OR
- more than one prior fracture† OR
- recent use of systemic glucocorticoids and one prior fracture† OR
- identified as high risk and/or receiving osteoporosis treatment before admission to long-term care

*Adapted from the 2010 Osteoporosis Canada guideline.[1]
†Excluding fractures of the hands, feet or ankles.

Residents at high risk

For Elderly LTC Residents at HIGH RISK of FRACTURE

STRONG RECOMMENDATIONS

- Calcium supplementation up to 500mg daily if they cannot consume 1200mg of calcium through diet
- Vitamin D supplements of at least 800 UNITS daily
- Hip protectors for those who are mobile

CONDITIONAL RECOMMENDATIONS

Multifactorial interventions that are individually tailored to reduce the risk of falls and fractures

BALANCE, STRENGTH AND FUNCTIONAL TRAINING EXERCISES be provided only when part of a multifactorial intervention to prevent falls and fractures

USE ONE OF THE FOLLOWING:

- Alendronate (weekly)
- Risedronate (weekly or monthly)
- Denosumab for those who have difficulty taking oral medications
- Zoledronic Acid for those who have difficulty taking oral medications

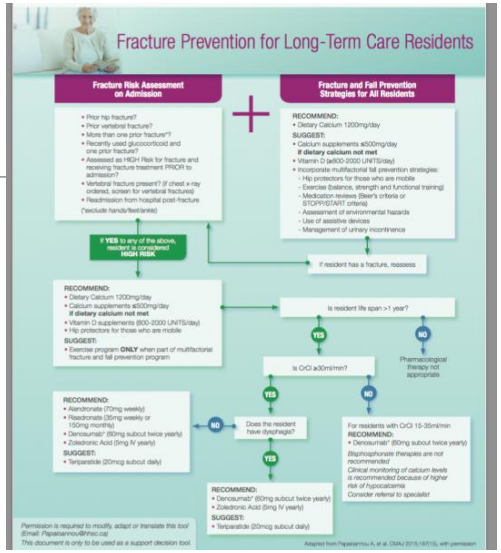
- Teriparatide

- Etidronate and Raloxifene **NOT** be used

These recommendations apply to the elderly with life expectancy greater than one year. Alendronate and Risedronate are not recommended for elderly with severe renal insufficiency (CrCl <35ml/min or <30ml/min respectively).

Zoledronic Acid should not be administered in people with severe renal impairment (CrCl <30ml/min).

Exercise caution for people who receive other medications that could affect renal function. Creatinine should be monitored before and periodically after treatment.



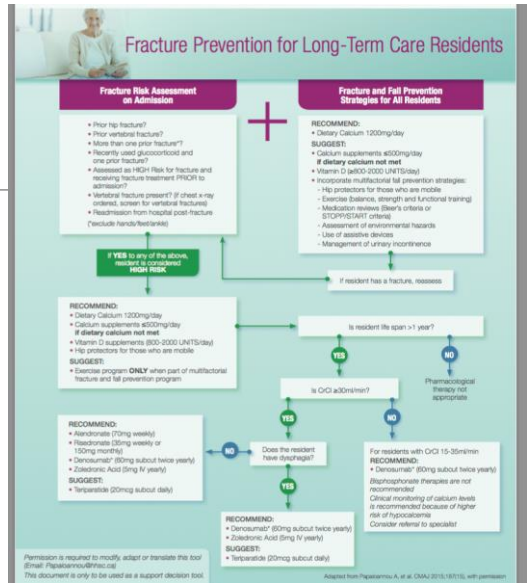
Residents not at high ris

For Elderly LTC Residents NOT at High Risk of FRACTURE:

CONDITIONAL RECOMMENDATIONS

Fracture prevention strategies depending upon resources and resident's (or their carer's) values and preferences:

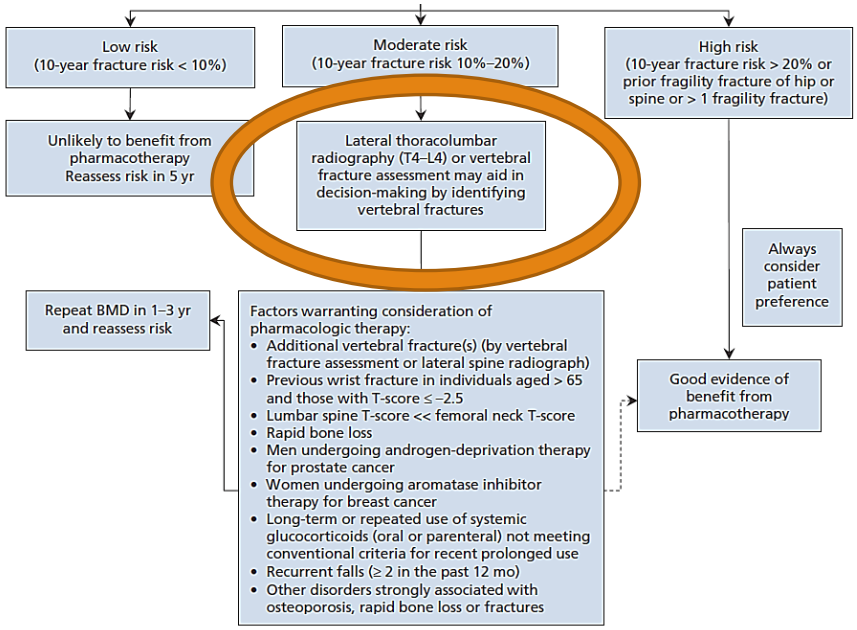
- Calcium supplementation up to 500mg daily, for those who cannot meet Recommended Dietary Allowance for calcium through food
- Vitamin D supplementation to meet the Recommended Dietary Allowance, 800 – 2000 UNITS/day
- Balance, strength and functional training exercises to prevent falls
- Hip protectors for those who are mobile



Screening for Vertebral Fractures

<u>WHY</u>
Prevalent
Domino effect
Kyphosis, Height loss, Pain, Falls, Morbidity

Alter treatment if diagnosed



National Osteoporosis Foundation 2014

- Vertebral imaging should be performed:

  – In all women age 70 and older and all men age 80 and older if BMD T-score is ≤−1.0 at the spine, total hip, or femoral neck
  – In women age 65 to 69 and men age 70 to 79 if BMD T-score is ≤−1.5 at the spine, total hip, or femoral neck
  – In postmenopausal women and men age 50 and older with specific risk factors:

- Low-trauma fracture during adulthood (age 50 and older)
- Historical height loss (*difference between the current height and peak height at age 20*) of 1.5 in. or more (4 cm)
- Prospective height loss (*difference between the current height and a previously documented height measurement*) of 0.8 in. or more (2 cm)
- Recent or ongoing long-term glucocorticoid treatment
  – If bone density testing is not available, vertebral imaging may be considered based on age alone.

Patient representative survey

Main results: Estimated support for VF screening in Canada	Online participants (n=681)	Osteoporosis clinic patients [A] (n=62)
Thought it is important to look for silent spinal fractures among Canadian adults		
Yes	94%	94%
No	0.4%	2%
Unsure	5%	5%
Missing		
Would be willing to have a spine x-ray to look for a silent spinal fracture		
Yes	94%	90%
No	2%	5%
Unsure	4%	5%

Vertebral Screening guidelines

Grade approach

Questions identified

Factors that predict vertebral fractures:

- Age (70), BMD, Height loss , glucocorticoid use, prevalent fracture, self report of VF

Evidence reviewed

Patient survey

Finalisation

Other guidance

GUIDELINES…

Choosing Wisely (Canada)

Don’t repeat dual energy X-ray absorptiometry (DEXA) scans more often than every 2 years.

The use of repeat DEXA scans at intervals of every 2 years is appropriate in most clinical settings, and is supported by several current osteoporosis guidelines.

Because of limitations in the precision of testing, a minimum of 2 years may be needed to reliably measure a change in BMD. If bone mineral densities are stable and/or individuals are at low risk of fracture, then less frequent monitoring up to an interval of 5-10 years can be considered.

Shorter or longer intervals between repeat DEXA scans may be appropriate based on expected rate of change in bone mineral density and fracture risk

Choosing Wisely (Canada)

Don’t prescribe bisphosphonates for patients at low risk of fracture

There is no convincing evidence that anti-osteoporotic therapy in patients with osteopenia alone reduces fracture risk.

The 2008 Cochrane Reviews for three bisphosphonates (Alendronate, Etidronate, Risedronate) found no statistically significant reductions for primary prevention of fracture in postmenopausal women.

Fracture risk is determined using either the Canadian Association of Radiologists and Osteoporosis Canada risk assessment tool (CAROC) or FRAX®, a World Health Organization fracture risk assessment tool. Both are available as online calculators of fracture risk. Given the lack of proven efficacy, widespread use of bisphosphonates in patients at low risk of fracture is not currently recommended.

Multimorbidity: clinical assessment and management - UK NICE, Sept 2016

restarting a treatment).

30. Take into account the possibility of lower overall benefit of continuing treatments that aim to offer prognostic benefit, particularly in people with limited life expectancy or frailty.

31. Discuss with people who have multimorbidity and limited life expectancy or frailty whether they wish to continue treatments recommended in guidance on single health conditions which may offer them limited overall benefit.

32. Discuss any changes to treatments that aim to offer prognostic benefit with the person, taking into account:

- their views on the likely benefits and harms from individual treatments
- what is important to them in terms of personal goals, values and priorities (see recommendation 24).

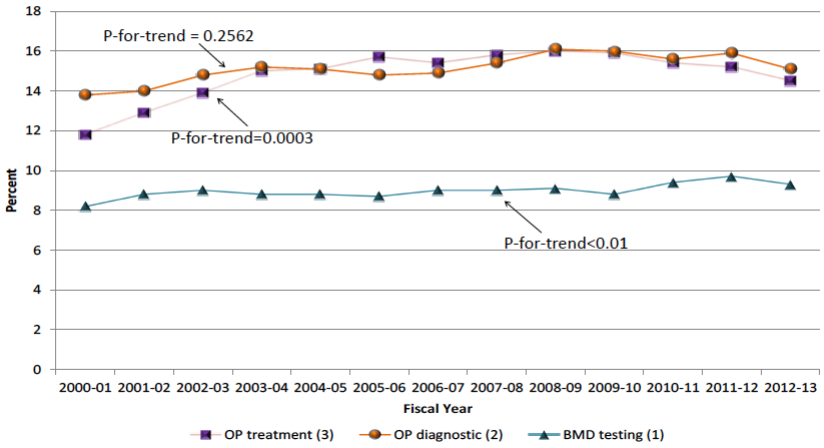
33. Tell a person who has been taking bisphosphonate for osteoporosis for at least 3 years that there is no consistent evidence of:

- further benefit from continuing bisphosphonate for another3 years
- harms from stopping bisphosphonate after 3 years of treatment.

Discuss stopping bisphosphonate after 3 years and include patient choice, fracture risk and life expectancy in the discussion.

Challenges in Osteoporosis Management

Figure 1: Temporal change in the proportion of BMD testing, osteoporosis diagnosis and osteoporosis treatment in the year following the fracture



A call to action?

Identify of those at high risk

Convey impact of fractures on clinical and patient-important outcomes (and on healthcare resource utilization)

Answer concerns regarding potential harms of medications

Strongly encourage lifestyle habits that enhance musculoskeletal health

Questions ?

Osteoporosis Canada
www.osteoporosis.ca

suzanne.morin@mcgill.ca