

Osteoporosis and Fracture Prevention in the Frail Older Adult Primary Care



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Osteoporosis and Fracture Prevention in the Frail Older Adult

Primary Care

Learning Objectives

1. Osteoporosis - Falls - Fractures:

Gain an understanding of the facts on osteoporosis, falls and fractures

2. Simple Bone Health Protection Strategies:

Learn about bone health protection strategies

3. Osteoporosis Resources:

Learn what is available for primary care

Osteoporosis and Fracture Prevention in the Frail Older Adult

Primary Care

This educational Slide Deck has been prepared for the Ontario primary care sector (Family Health Teams and Community Health Centres) to use as a learning tool for promoting the osteoporosis /fracture prevention of older adults with frailty and chronic disease. The authors have made every effort to produce accurate, evidence-based, practical, and useful information at the time of release. However, all primary care organizations and their health care providers remain responsible for using their own discretion in adapting the Slide Deck information to their clinical care and practice situations. None of the parties involved in the development of this Slide Deck can be held liable for any errors, omissions, losses, damages, injuries or consequences arising from the use of information contained within this Slide Deck.



Osteoporosis and Fracture Prevention in the Frail Older Adult

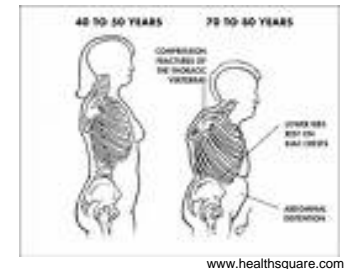
Primary Care

The facts?

What do you know about osteoporosis/
fracture prevention?

Think of **3 things** you know are true facts
about osteoporosis/fracture prevention.
It can be in general, what you've read
or seen, that relates to frail older adults and primary care...

1. ...
2. ...
3. ...



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What are the facts on osteoporosis, falls & fractures?

Osteoporosis

- **Who has osteoporosis?**

→ Women	AND	Men
64% (65-74 yrs)		20% (50+ yrs)
86% (> 85 yrs)		



www.ag.arizona.edu

- **Who has more deformity from osteoporosis?**

→ Men > after age 70 more deformity in men than women

- **What is the prevalence of osteoporosis in the frail older adult?**

→ 63% (65-74 yrs) to 85% (85+ years)

(World Health Organization, Osteoporosis Canada, Zimmerman et al. 1999)

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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & falls

- **How many older adults fall?**

- ➔ 33% of older adults fall each year

- **Do falls result in serious injuries in older adults?**

- ➔ 36% of falls result in serious injuries

- ➔ falls are the biggest cause of injury deaths, serious injuries and functional decline



www.injuryboard.com

(Ontario Injury Prevention Resource Centre, 2007/2008)

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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & falls

- **Are falls costly?**

- Falls: most costly injury, totaling more than \$1.9 billion
- Older adults 55+ years accounted for almost half of these costs, at \$962 million.

- **The numbers are overwhelming.....**

- Every 10 minutes in Ontario, at least one older adult visits an emergency department due to a fall.
- Every 30 minutes in Ontario, at least one older adult is admitted to hospital due to a fall



(Ontario Injury Prevention Resource Centre, 2007/2008)

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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & falls

- **How many older adults who fall are hospitalized?**
 - ➔ 84% of injury hospitalizations in individuals over 65 years were due to unintentional falls
 - ➔ Older adults represent 11% of all visits to an emergency department and 40% of hospitalizations due to an injury
 - By age group:
 - 80+ yrs: highest ER and hospitalization rate for fall related injuries
 - By gender:
 - women 76-91 years : highest hospitalization rate for fall injuries

(Ontario Injury Prevention Resource Centre, 2007/2008)

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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & fractures

- **What is the biggest cause of fractures in older adults over 50?**
 - Osteoporosis
- **Who fractures?**
 - Women 40% AND Men 24% % (in their remaining lifetime)
- **What is the most common osteoporotic fracture?**
 - Spinal fractures (vertebral) > also hip, wrist, long bones
 - Spinal fractures are underdiagnosed despite high prevalence (40%w, 13%m)
 - Fractures most frequent reason for hospitalization of LTC residents (femur, hip)
- **What is the most devastating osteoporotic fracture?**
 - Hip fractures
 - 40% of hip fracture survivors never return to their previous health
 - Life expectancy after a hip fracture is decreased by 6 years
 - Hip fracture dramatically impacts on quality of life. (Papaioannou et a, 2002;



Ronald et al. 2008; Sugarman et al. 2002)

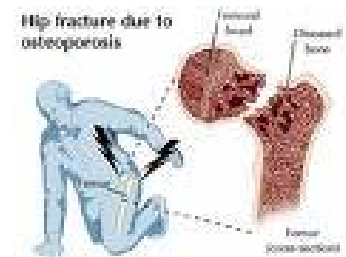
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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & hip fractures

- **How serious are hip fractures for older persons?**
 - ➔ A women at age 50 is as likely to die from a hip fracture in her remaining lifetime as she is from breast cancer
 - ➔ 1/3 of all hip fractures occur in men
- **Who suffers more disability from a hip fracture? Women or men?**
 - ➔ More severe disability in men
 - ➔ The personal disability can be compared to that of a stroke or a heart attack



(World Health Organization, Osteoporosis Canada)

www.bonespecialist.co.uk

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What are the facts on osteoporosis, falls & fractures?

Osteoporosis & hip fractures



- **Do older persons die from a hip fracture?**

- ➔ Older people can die from a hip fracture

- **Who has the higher death rate? Women or men?**

- ➔ death rate in the first year after a fracture is higher for men

- ➔ death rate for men is higher than women in the first year after a fracture

34%

20-24%

(average 25%)

- ➔ if you're caring for a patient in LTC, the death rate for those living in LTC at the time of fracture

- At 6 months: 31.4%

- At 12 months: 39.0%

(Papaioannou et al. 2000)

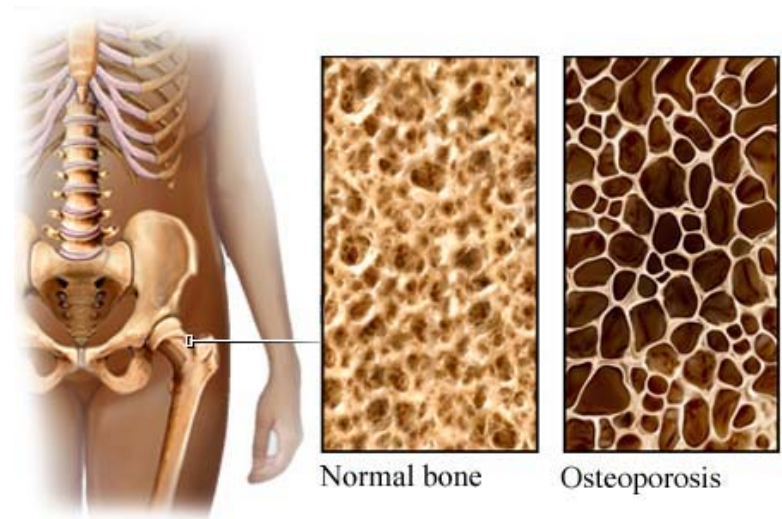
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What are the facts on osteoporosis, falls & fractures?

What are the costs of hip fractures related to osteoporosis?

- Approx 25,000 hip fractures each year in Canada
 - 70-90% due to osteoporosis
- Annual cost of hip fracture care in Canada is estimated at \$650 million



www.osteoporosis.ca

(Wiktorowicz ME et al. 2001)

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What are the facts on osteoporosis, falls & fractures?

So what does this all mean?

- **Almost all fractures are due to falls and osteoporosis**
 - 2.3%-6% of falls result in fractures
 - 70% of fractures occur with falls
 - 1% of falls result in hip fractures
 - 24% of hip fracture survivors are admitted to institutional care (LTC)
 - Falls account for 40% of LTC admissions

In Ontario, 65+ population is expected to almost double by 2031. If injury rates remain the same: by 2031, we will need the equivalent of 5 new acute care hospitals, each with 200 beds, solely to accommodate additional older adults hospitalized with an injury.

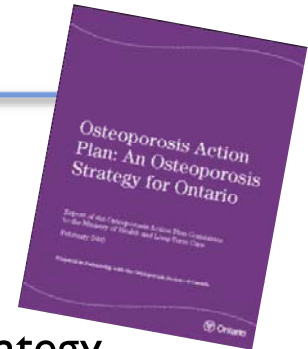
(Ontario Injury Prevention Resource Centre, 2007/2008; Papaioannou et al, 2000)

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Bone Health Protection Strategies

What is the Ontario Osteoporosis Strategy?



- Launched in February 2005 – Ontario’s first Osteoporosis Strategy
 - October 2000: Ontario Women’s Health Council
“A Framework and Strategy for the Prevention and Management of Osteoporosis”
 - May 2002 – Osteoporosis Action Plan Committee (OAPC) . “Osteoporosis Action Plan: An Osteoporosis Strategy for Ontario”
- Overall Goals – Ontario Osteoporosis Strategy – all components
 - The goal of the Strategy is to reduce fractures, morbidity, mortality and costs from osteoporosis.
 - Through a comprehensive approach aimed at health promotion and disease management.

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Bone Health Protection Strategies

What is the Ontario Osteoporosis Strategy?

Component	Stakeholders
Health Promotion/Education	Osteoporosis Canada Dairy Farmers of Canada (Ontario)
BMD Testing Access and Quality	Osteoporosis Canada Ontario Association of Radiologists Women's College Hospital
Post Fracture Care	Osteoporosis Canada Ontario Orthopaedic Association Toronto Rehabilitation Institute McMaster University
Professional Education	Osteoporosis Canada Ontario College of Family Physicians Alliance for Better Bone Health Foundation for Medical Practice Evaluation
Research and Evaluation	Osteoporosis Canada Women's College Hospital (ORMEW) St. Michael's Hospital

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Bone Health Protection Strategies – Team Approach

Improved Assessments

- Do you know who is at risk?
 - Every older adults> Osteoporosis is a disease of aging
- What are the major risk factors in the community?
 - Age >85 years
 - Previous fractures including vertebral compression fractures (fragility fracture) .
 - Low bone mass density
 - Steriod use
 - Prior (history of) fragility fracture



www.us.novartis oncology.com

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Can we predict who will sustain a fracture from a fall?

Getting closer

Research is underway

Albertsson et al. (2007) FRAMO Index –
Fracture and Mortality Index – Sweden

- 4-item risk assessment index – community elderly
- 2 years, 1,600 – hip fracture, fragility fracture, mortality
- Able to predict who would sustain a hip fracture, fragility fracture and death risk
- Determined 4 clinical risk factors for hip fracture
 - Age, weight, rising from chair, fracture after 40 yrs

Table 1. Questions Used to Assess the 4 Risk Factors in Risk Model 1

Question	Points
1. What is your present age?	
≥80 y	1
70-79 y	0
2. What is your current weight?	
<60 kg	1
≥60 kg	0
3. Can you rise 5 times from a chair without using your arms? (Try if you want.)	
No, I must use my arms to rise	1
Yes	0
4. Have you broken any bones after the age of 40 y? If so, which bone?	
Have your vertebrae been x-rayed?*	
Fracture of wrist/lower arm, upper arm, hip, or vertebrae, or vertebral compression seen on radiograph	1
No fracture, or fracture in some other location	0

* Specific question about vertebral radiographs posed only to women in the Vislanda population.

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Bone Health Protection Strategies – Team Approach

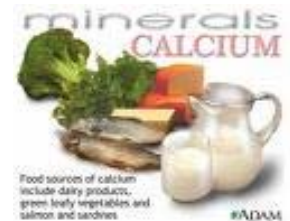
Promoting calcium rich diets and adequate intake of calcium

Promoting adequate intake of Vitamin D

- simple, low-cost and incredibly beneficial interventions.
- Calcium & Vitamin D levels are alarmingly low
 - Related to increased falls risk, reduced muscle strength, impaired neuromuscular coordination and increased body sway

Recommended daily doses:

- **Calcium** through **diet** and if necessary, supplementation is **1500 mg**
- **Vitamin D** is **1000 IU**



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Bone Health Protection Strategies – Team Approach

Why is Vitamin D so important?

- Vitamin D supplements taken in combination with Calcium
 - **reduces falls by 22%**
 - improves bone density, muscle function, body sway and coordination
 - reduces muscle pain, hip and spinal fracture and the debilitating effects of osteoporosis.
 - ☑ Plus there are no side effects
 - ☑ Under prescribed
- It's better to obtain Vitamin D through supplementation
 - Patients who insist on going outside – what is the Vitamin D benefit?
 - In fair-skinned persons: Exposing 5% of body surface for 5 minutes of noontime summer sun, 2-3x per week = 430 IU



(Bischoff-Ferrari et al., 2004; Clon-Emeric, 2007; Papaioannou et al. 2000)

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Bone Health Protection Strategies – Team Approach

Promoting osteoporosis medications

- **Osteoporosis Medications**

- Under prescribed (know the patient's renal status)
- treat and prevent osteoporosis
- studies provide good evidence that the bisphosphonates alendronate (fosamax), etidronate, (didrocal), ibandronate (boniva IV), and risedronate (acontonel), as well as the hormones calcitonin and teriparatide and the selective estrogen receptor modulator raloxifene,
 - prevent vertebral, non-vertebral, or hip fractures in high-risk adults
- **Bisphosphonates**, also
 - increase bone density
 - reduce fractures by 40-60%, regardless of age, work within 6 months and must be taken with daily vitamin D and calcium.



(Colon-Emeric et al., 2007; MacLean et al., 2008; Papaioannou et al., 2000)

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Bone Health Protection Strategies – Team Approach

Promoting the use of hip protectors

- are padded undergarments designed to decrease the impact of a fall on the hip by either absorbing or shunting energy away from the hip, thus decreasing the risk of hip fracture.
- **Who should wear hip protectors ?**
 - Most promising studies indicate that for high risk LTC residents with a history of hip fracture, using hard-shelled hip protectors seems to reduce the number of fractures.
 - Studies looking at the community are not as successful, mainly due to compliance with wearing them



(Brown et al, 2008; Sawka et al. 2007; Sawka et al., 2005)

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Bone Health Protection Strategies – Team Approach

Promoting exercises

- Resistance exercises improve mobility, balance and strength
 - Gait training, stairs, muscle strengthening, coordination and postural training, parallel bar exercise, walking
 - Wheelchair dependent older adults can use free weights



www.easthamptonseniorcentre.org

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What's happening in the Community

Primary Care Education – Osteoporosis Area Managers

Patient education

Education for health care professionals

Public health kit

Examples:

- Break Through Programs
- YMCA and other recreational facilities
- Public Health Units
- Falls Prevention Networks
- Bone Health Groups
- Seniors Advisory Committees
- Seniors Services and Programs
- Osteoporosis Canada local volunteer-based chapters
- Presentations

(Ontario Osteoporosis Strategy & Osteoporosis Canada, 2008)

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Primary Care

What's happening in the Community

Primary Care Education – Osteoporosis Area Managers

Education for health care professionals

Public health kit

Osteoporosis resources www.osteoporosis.ca

Examples:

For Physicians:

Osteoporosis in Men Age 50+: Diagnosis and Management – a quick reference guide for physicians on the diagnosis and management of osteoporosis in men

Brown, JP and Josse, RG. (2002). Clinical practice guidelines for the diagnosis and management of osteoporosis in Canada, CMAJ, 167, S1-S24 (supplement).

For use with patients:

Osteoporosis and Men: Not Just a Woman's Disease – A fact sheet about osteoporosis for men.

Your Guide to Strong Bones – A plain language, easy-to-use tear-off sheet for women about osteoporosis and lifestyle modifications - calcium, vitamin D and exercise.

Osteoporosis and You: A woman's guide to bone health – A comprehensive resource for women with information on: risk factors for osteoporosis, diagnosis, calcium and vitamin D, exercise and treatment options.



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What's happening in the Community

Osteoporosis Fitness Certification “Bone Fit”

- A program targeted to kinesiologists, physiotherapists, and CSEP certified exercise physiologists, which will provide them with the knowledge and tools to instruct adults over the age of fifty in specific exercise routines for the prevention and management of Osteoporosis.

Post Fracture Care

- Post fracture clinics with Screening Coordinators
- Refer post fracture patients for osteoporosis assessment and treatment
- Post fragility fracture protocols and care

Fracture Fighters - Rehab

- Integrate osteoporosis into post fracture rehab programs
- Include management of osteoporosis as part of rehab program

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