Closing the Care Gap in Osteoporosis

ICE Conference 2015

Pat McCarthy-Briggs RD, MHEd
Thank You!
What is osteoporosis?

“...a systemic skeletal disease characterized by low bone mass and microarchitectural deterioration of bone tissue, with a consequential increase in bone fragility and susceptibility to fracture”

World Health Organization
Focus shifts to broken bones
New treatment guidelines call for a greater emphasis on detecting micro-fractures and high-risk patients

Never mind how much calcium is in your bones as you age, concentrates instead on preventing and treating tiny fractures that can cause tremendous pain. That is the message emerging from new guidelines for the diagnosis and management of osteoporosis, published Tuesday in the Canadian Medical Association Journal.

"This is a major shift in approach to target patients at highest risk," said Alexandra Papapanou, a professor of geriatric medicine at McMaster University in Hamilton, Ont., and lead author of the guidelines, in an interview.

Until now, the key strategy for tackling osteoporosis - a condition that affects two million Canadians - has been testing for bone mineral density (the levels of minerals such as calcium in the bones) and using drugs to bolster BMD. But the new guidelines take an entirely different tack, placing emphasis on detecting and treating fragility fractures - tiny breaks of the spine, hips and wrists that occur during minor falls.

"When you break a bone after the age of 65, that needs to be taken seriously," Dr. Papapanou said.

She noted that many fractures, particularly in the spine, are undiagnosed or untreated becauseaches and pains are often dismissed as a normal part of aging. But those small breaks are a key clue that the bones are weakening, and are often a precursor to a more severe, disabling injury.

"A broken hip can lead to a downward spiral of disability and death," Dr. Papapanou said. "But we can prevent a lot of these by making sure we're managing bone health and detecting these tiny fractures."

Tiny breaks in vertebrae, hips and wrists often go undetected, says report that calls for more aggressive treatment.

'SILENT EPIDEMIC' OF SPINAL FRACTURES

Contrary to popular belief, losing height and becoming hunched are not normal features of aging. These conditions are often the result of tiny fragility fractures as well.

Setting up a worse break

One in five women with a spinal fracture will suffer another, more serious, break within a year.

In the United States, more than 1 million fractures occur each year, costing the country about $18 billion. In Canada, the cost is estimated at $3.6 billion annually.

"Like any other condition, people with osteoporosis need to know their risk and be given treatment options that can help them manage their condition," Dr. Papapanou said.

The guidelines are based on a review of the latest research and a consensus of experts in the field.

"We don't recommend treating everyone for osteoporosis," Dr. Papapanou said. "But we do recommend that women and men over 70 who have never been on osteoporosis medication should be tested for bone density."

"We also recommend that people at high risk - those with a previous fracture or a family history of osteoporosis - be screened for bone density," she said.

"It's important to remember that treating osteoporosis is not a one-size-fits-all approach," Dr. Papapanou said. "Each person's risk is different, and treatment should be tailored to their needs."

The guidelines also recommend that men over 50 and women over 60 without a previous fracture should be screened for bone density.

"We recommend that everyone over 50 be screened for osteoporosis," Dr. Papapanou said. "It's a simple test that can help identify people who may be at risk for fractures."

"It's not too late for people who have not been screened to get tested," she said. "They can benefit from treatment and reduce their risk of fractures."
The Lifecycle of Bones

- About 90% of bone mass develops by 18 years of age
- Skeletal growth continues until mid/late 20’s when “Peak Bone Mass” is achieved
- Bone loss begins around 35 (about .5% each year)
- Women lose bone more rapidly during the years immediately after menopause
Osteoporosis is a condition where bone strength is reduced, increasing a person’s risk of fracture.
Types of Osteoporosis

Primary
Bone loss associated with menopause and age.

Secondary
Bone loss associated with (or secondary to) disease or drug therapy.
In Canada at least 1 in 3 women and 1 in 5 men will suffer an osteoporotic fracture in their lifetime.

Almost 2 million Canadians live with osteoporosis.
Osteoporosis Canada’s 2010 Clinical Practice Guidelines focus on preventing (second) fractures.

Document at: www.osteoporosis.ca
Fragility Fractures are broken bones that happen spontaneously, or as a result of normal daily activities or a fall from standing height or less.

Fragility fractures are the most serious sign of osteoporosis.
Common Fracture Sites

Over 80% of all fractures after age 50 are caused by osteoporosis.
Spinal Fractures can result in:

- height loss
- back pain
- sleep disturbance
- impaired activities of daily living
- depression
- protruding abdomen
- digestive disorders
- trouble breathing
Height loss is an early warning

- ¾ inch in one year (~ 2cm)
- 2 ½ inches since young adulthood (~ 6 cm)

...should trigger a spinal x-ray and assessment for osteoporosis.
HIP FRACTURES:
40% who fracture a hip had a prior (non-hip) fracture.

It was not recognized as a warning sign of osteoporosis.
25% of hip fractures occur in men but men with osteoporosis are often not diagnosed.
Hip Fracture
Long-term reality

44% ⇒ return home
10% ⇒ another hospital
27% ⇒ rehabilitation centre
17% ⇒ long-term care facility
The **Cost of**
OSTEOPROSTATIC Fracture Care
in Manitoba:
Over $20 million each year
How Many Fractures?

Incidence of Osteoporotic Fracture, Heart Attack, Stroke and Breast Cancer in Canadian Women

- Osteoporotic Fractures: 21,200
- Hip Fractures: 22,200
- Pelvic Fractures: 9,800
- Wrist Fractures: 31,100
- Vertebral Fractures: 37,000
- Heart Attack: 19,500
- Breast Cancer: 22,300
- Other Fractures: 39,500
Who Gets Treated?

There is a big gap between recommended practices and treatment currently provided to Canadians with osteoporosis.
Fragility Fractures and Care Gaps

80% of fractures in those over 50 are fragility fractures.

- Fewer than 20% of women & 10% of men with fragility fracture receive osteoporosis risk assessment or treatment post fracture.
- …a missed opportunity to prevent future fractures.

The guidelines are part of a focused effort to close the gap.
Looking *beyond* BMD

The decision to prescribe osteoporosis medication is based on a “comprehensive fracture risk assessment”.

The assessment includes:
- BMD results
- other risk factors
- age & gender

It is a more accurate prediction of fracture risk.
Assessment for Osteoporosis and Fracture Risk

Who should be assessed?
- Women and men over 50 to identify those at high risk
- Anyone over 50 who has experienced a fragility fracture

How is the Assessment Done?
- Detailed history to identify risk factors for low BMD, future fractures and falls:
  - Prior fragility fracture
  - Parental hip fracture
  - Glucocorticoid use
  - Current smoking
  - High alcohol intake (3 or more drinks per day)
Assessment for Osteoporosis and Fracture Risk con’t

- Rheumatoid arthritis
- Inquire about falls in past 3 months
- Inquire about gait and balance

Physical examination

- Measure weight
- Screening for vertebral fractures:
  - Measure height annually
  - Measure rib to pelvis distance
  - Measure occiput-to-wall distance
  - Spinal x-ray indicated if there is evidence of vertebral fracture
- Assess fall risk by using Get-Up-and-Go Test
• **High fracture risk** individuals will receive prescription medication and have another BMD test within three years.

• **Moderate risk** individuals will be further assessed to see if they need medication with bone density re-assessed within 3 years.

• **Low risk** individuals do not need prescription medication and will have BMD follow-up.
Use FRAX tool to assessing 10 year risk of fracture without BMD score

www.osteoporosis.ca
LTC residents

Using FRAX (without BMD), it’s likely safe to assume all residents (esp women) are at high risk of fracture.

There is a paucity of evidence for treatment goals for the very old... lifts & transfers, ambulatory vs not, frail elderly; offer medication - or calcium/vitamin D only.
Medications: how they work:

Slow Bone Loss
- Bisphosphonates
- Denosumab
- Raloxifene
- HT
- Calcitonin

Increase Bone Building
- Parathyroid Hormone
Is it working?

- You will not feel any different
- Yes - if bone density remains the same or increases, and no new fractures have occurred
- Monitored through Bone Mineral Density test
- If you discontinue, bone loss may result
The goal of osteoporosis management is to prevent (another) fracture.
Veg & Fruit: many components associated with bone health

Grain Products: energy for activity

Milk & Alternatives: calcium/other minerals, vitamins D & A, quality protein

Meat & Alternatives: quality protein – essential for bone health & fracture repair
Important nutrients

- Calcium is one of the key minerals that makes bone hard.

- Vitamin D ensures the body can absorb enough calcium from the gut.

- Protein is essential to build and maintain collagen in bone (growth, maintenance & fracture healing).
Calcium has Many Roles

- **99%** of the body’s calcium is found in bones and teeth
- **1%** of the body’s calcium is found in blood where it has many life sustaining functions

If dietary calcium is not enough to keep normal blood levels, the body will draw what it needs from bones.
<table>
<thead>
<tr>
<th>Age</th>
<th>Calcium Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3 yrs</td>
<td>500 mg</td>
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<tr>
<td>4 - 8</td>
<td>800 mg</td>
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<tr>
<td>9 - 18</td>
<td>1300 mg</td>
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<tr>
<td>19 - 30</td>
<td>1000 mg</td>
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<tr>
<td>31 - 50</td>
<td>1000 mg</td>
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<tr>
<td>&gt; 50</td>
<td>1200 mg</td>
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</table>
Osteoporosis Canada strongly recommends obtaining calcium from food sources whenever possible.
<table>
<thead>
<tr>
<th>Calcium-Rich Foods</th>
<th>Portion Size</th>
<th># of Portions/Portion</th>
<th>Total Portions</th>
<th>Milligrams Per Portion</th>
<th>Total Milligrams of Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black beans, Lima beans, Lentils—cooked</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Broccoli</td>
<td>2 slices or 70 g</td>
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<tr>
<td>Gai lan, Mustard greens</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Hummus</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Orange—fruit, not juice</td>
<td>1 medium</td>
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<tr>
<td>Almonds</td>
<td>1/4 cup or 60 mL</td>
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<tr>
<td>Bor choy, Kale, Rapini, Okra—cooked</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Chickpeas, Kidney beans, Pinto beans, Romano beans—cooked</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Cottage cheese—regular or low fat</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Dessert tofu</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Ice cream, Frozen yogurt</td>
<td>1 Tbsp or 15 mL</td>
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<tr>
<td>Parmesan cheese</td>
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<tr>
<td>Stuffed beans, Soybeans, White beans—cooked</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Blackstrap molasses</td>
<td>1 Tbsp or 15 mL</td>
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<tr>
<td>Cola—cooked</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Cheese—soft and semi-soft such as:</td>
<td>25 g</td>
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<tr>
<td>Blue, Feta, Mozzarella</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Pancake or Waffle</td>
<td>1 Tbsp or 15 mL</td>
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<tr>
<td>Pudding—made with milk</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Tofu—made with calcium</td>
<td>100 g</td>
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<tr>
<td>Cheese—firm such as Cheddar, Swiss, Gouda</td>
<td>25 g</td>
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<tr>
<td>Cheese—processed</td>
<td>2 slices, 21 g each</td>
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<tr>
<td>Salmon— canned with bones</td>
<td>1 Tbsp or 15 mL</td>
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<tr>
<td>Sardines— canned with bones</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Soup—made with milk</td>
<td>1 Tbsp or 15 mL</td>
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<tr>
<td>Yogurt, fruit flavoured—regular or low fat*</td>
<td>1/4 cup or 125 mL</td>
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<tr>
<td>Milk—skim, 1%, 2%, whole, buttermilk—chocolate, flavoured*</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Calcium-fortified beverages such as Soy, Rice, Orange juice</td>
<td>1 cup or 250 mL</td>
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<tr>
<td>Skim milk powder</td>
<td>1/4 cup or 250 mL</td>
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<tr>
<td>Yogurt—plain, regular or low fat*</td>
<td>1/4 cup or 175 mL</td>
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</tr>
</tbody>
</table>

*Add 100 mg for each portion of calcium enriched milk or yogurt.

MY TOTAL

MY TOTAL CALCIUM INTAKE □ mg
Calculate your daily calcium intake

https://www.osteoporosis.ca
Calcium Supplements

- Do not take more than 1200 mg daily from a combination of food and supplements.

- Spread calcium intake (from food and/or supplements) throughout the day – this provides bones with a constant source of “building material”.

- Do not take more than 500 mg supplement at one time.

- Take supplements with lots of water.

There is NO benefit to consuming more that 1200 mg of calcium.
WRHA LTC Evidence Summary:

- It is challenging to meet calcium recommendations for LTC residents.
- Calcium supplements may be poorly tolerated b/c of tablet size and constipation.
- A single nutrient supplement may decrease absorption of other minerals (Fe, Zn, Cu).
- Fortification with skim milk powder is a good alternative (as a source of protein as well as calcium).
Vitamin D

- Increases calcium absorption
- Improves muscle function, which improves balance and help prevent falls
- Is produced by skin with sun exposure:
  - 15 minutes of sunlight on face & forearms in summer (no conversion in skin between Oct & Mar)
  - body’s ability to produce Vitamin D decreases with age
  - Institutionalized elderly at high risk of deficiency
# Vitamin D Recommended Intake

<table>
<thead>
<tr>
<th>Age</th>
<th>Recommended Daily Intake (IU’s)</th>
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<tbody>
<tr>
<td>Children (1- 19)</td>
<td>600</td>
</tr>
<tr>
<td>Men &amp; Women (19 – 49,) (includes pregnant &amp; breastfeeding women)</td>
<td>400 - 1000</td>
</tr>
<tr>
<td>Men &amp; Women (50+)</td>
<td>800 – 2000*</td>
</tr>
</tbody>
</table>

*older adults with osteoporosis or who are prone to falls*
- WRHA Long Term Care Program recommends 20,000 IU vitamin D₃ per week.
- American Geriatric Society recommends average of 4000 IU vitamin D₃ per day.
- 50,000 IU D₃ per month suggested (MB).

4000IU vit D/day is considered safe and does not need to be monitored.

Do not attempt to meet D requirements with cod liver oil.
Protein

In addition to calcium and other minerals, bone is made up of protein.

Protein:

• is essential for bone strength and flexibility.
• aids fracture healing and helps repair body tissue.
• helps maintain muscle tissue – this is important for mobility and to prevent falling.
Food sources of protein

Meat & Alternatives: 2-3 servings daily*
One serving of meat is about the size of a deck of cards.

Milk & Alternatives: 2-3 servings daily*
One serving is 250 ml of milk.

*Canada’s Food Guide, for those over 50
Older Adults and Food...

Decreases in muscle mass, BMR and physical activity lead to reduced energy needs and appetite often decreases with age; however nutrient needs remain relatively unchanged.

...nutrients must be packed into less food and protein intake often suffers.

Dental pain, tooth/dental plate loss, loose dentures etc often make it difficult or unpleasant to eat high protein foods.

Ground or canned meat, legumes (& Beano!) eggs, chopped liver, cottage cheese, sausages & peanut butter are good protein sources and easier to chew.
Bones and Physical Activity

- Bone is living tissue that responds well to exercise
- Physical activity "activates" bone cells, discouraging bone loss
- Regular weight bearing activity (like walking), strength and balance exercises are all important.
Posture can be improved by stretching and strengthening exercises for specific muscle groups.

Some activities are designed to improve balance.
Falling is serious!

• 1 in 3 adults over the age of 65 fall each year
• 1 in 2 adults over the age of 80 fall each year
• Those who have fallen once have a greater chance of falling later

Approx. 95% of hip fractures in those over 65 years are the result of a fall.
Fall Cycle

Increased Risk of Falling

Fear of Falling

Loss of Strength & Mobility

Decreased Activity

Dehydration can cause hypotension, confusion, dizziness & disorientation... increases risk of falling.
The Winnipeg Regional Health Authority is pleased to offer resources specifically developed for WRHA staff and other professionals working in the Winnipeg health region.

<table>
<thead>
<tr>
<th>Professional Resources</th>
<th>Other Staff Resources</th>
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<tbody>
<tr>
<td>Pediatric bone screening now available</td>
<td>NEW: Ebola Virus Resources for Region Staff</td>
</tr>
<tr>
<td>Advance Care Planning</td>
<td>NEW: Employee Survey Follow Up</td>
</tr>
<tr>
<td>Allied Health</td>
<td>Education Portal</td>
</tr>
<tr>
<td>Collaborative Care</td>
<td>Important notice regarding your HEB Life Insurance Plan</td>
</tr>
<tr>
<td>Constant Care Change in Practice Guidelines</td>
<td>Computer Training</td>
</tr>
<tr>
<td>Evidence Informed Practice Tools</td>
<td>EChart Manitoba</td>
</tr>
<tr>
<td>Health Equity</td>
<td>Employee Assistance Program</td>
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<tr>
<td>Immunization</td>
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CLINICAL PRACTICE GUIDELINES FOR THE DIAGNOSIS AND MANAGEMENT OF...

Page 1. DIAGNOSIS AND MANAGEMENT OF OSTEOPOROSIS Regional Clinical Practice Guideline
October 2014 Diagnosis and Management Of Osteoporosis Page 2...
About Our Toolkit

Toolkit Items Include:
- DVD: 10 min bone health protection strategies for LTC
- Panel Card – Pop Quiz
- Panel Card – Make it part of your falls program
- Panel Card – Hip protectors: falls fracture shield
- Panel Card – Vitamin D and Calcium
- Panel Card – Bisphosphonates and how to give them
- Panel Card – Mini Poster
- Case Study
- SHRTN newsletter, BP Blogger newsletter: Bones
- 2010 Osteoporosis Guidelines
- Purchase Order for Osteoporosis LTC Items

Toolkit Information

Our Toolkit is intended to be used by regulated and unregulated LTC home staff to support their efforts in best practice implementation. LTC homes in various stages of guideline implementation will benefit from the resources presented in the Toolkit.

The Toolkit is packed with easy-to-use evidence-based information about bone health protection strategies for residents that long term homes can use to improve their osteoporosis prevention care.

We recommend that you read the Toolkit as a whole, as it is a resource and is being updated and revised on a regular basis. Visit this site often to see what's new!

To use the Toolkit you can either view and download individual items that we have made available on this website or you can order the full Toolkit which comes in a prepared Toolkit box.

http://osteoporosislongtermcare.ca
For more information

(204) 772-3498

e-mail: manitoba@osteoporosis.ca

www.osteoporosis.ca