VIRTUAL EDUCATION FORUM
Prevent the Fall, Prevent the Fracture

Thursday, March 22, 2012

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Moderator:
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Learning Objectives

• Define a fall and discuss the reasons why falls occur.
• Discuss the relationship between osteoporosis, falls and fractures.
• Explore preventive strategies individuals can use to reduce their risk.
• Suggest resources available to prevent falls and reduce injuries.
A Fall is defined as......

“a sudden, *unintentional* change in position resulting in an individual landing at a lower level such as on an object, the floor, or the ground, with or without an injury”

• Report on Seniors’ Falls in Canada, Public Health Agency of Canada, 2005
Why do we need to Prevent Falls?

- Leading cause of injury-related hospitalization for seniors in Canada
- 1/3 people aged 65+ and 1/2 of people age 80+ fall once/year
- 9X more fall injuries occur among those 65+ compared to younger ages
- ½ of falls among seniors result in a minor injury and 5% to 25% in serious injury
• **95%** of hip fractures are due to a fall and
• 20% of those 65+ die within a year of the hip fracture
• Women are **3X** more likely than men to be hospitalized for a fall-related injury
• 40% of all long term care admissions are the result of a fall
• 72% of falls occur within and around a senior’s home
• Even without injury, a fall can cause a loss in confidence and curtailment of activities
Myth or Fact

• We get old, we fall down, there is nothing we can do about it, that’s life
Normal Age Changes

As we age these systems normally begin to decline:

• Cardio-respiratory
• Muscle, motor and joint function
• Sensory systems
• Cognitive
• A fracture is usually the result of a fall
• Falls occur because of a complex set of conditions
• 3 factors leading to a fracture:
  • A fall
  • Loss of protective mechanisms
  • Weaker bone strength
Risk of Fracture

Lifetime risk of broken bones from osteoporosis: At least 1 in 3 women and 1 in 5 men
Do we relate a fracture to our bone strength/health?
Description of the research sample* (n=14,484):
- Mean age = 69.1 (SD11.4), range 50-103
- 83% female
- 23% (n = 3385) had BMD test in past year
- 34% (n = 4907) previous OP diagnosis
- 32% (n = 4579) were previously prescribed OP Rx (93% of those diagnosed)

*all data are self-reported
Research sample n=14,484 17June2011dataset
Research sample at baseline

- Fracture sites

#1 Wrist
#2 Ankle
#3 Shoulder
#4 Hip

Fracture sites:
- Wrist: 5667
- Shoulder: 2210
- Hip: 1671
- Ankle: 2665
- Other: 868
- Elbow: 819
- Tibia: 430
- Femur: 279
- Pelvis: 125
- Clavicle: 131

St. Michael's Hospital
Research sample n=14,484 17 June 2011 dataset
Research sample at baseline
- Risk factors

- 32% Previous fragility fracture (n=4698)
- 28% Fell in past year (n=4017)
- 9% Maternal hip fracture (n=1295)
- 14% Currently smoking (n=2081)
- 6% Oral steroid use >3 months (n=857)
- 6% Previous Rheumatoid Arthritis diagnosis (n=913)

St Michael’s Hospital
Research sample n=14,484 17 June 2011 dataset
Research sample at baseline –

Patient (mis)perception

Could OP cause fracture?  (n=10,336 answers)

- 60% No (n=6230)
- 25% Don’t know (n=2615)
- 14% Yes (n=1486)

Prevalent perception of bone quality  (n=10,439 answers)

- 52% “normal or normal for my age” (n=5,415)
- 27% “thin” (n= 2,837)
- 21% “I don’t know” (n=2,180)
Research sample at baseline – Patient (mis)perception

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Fractures = Broken Bones

• People who have osteoporosis and have a fall are at high risk of fracture

• Those who have had a fracture are at high risk for fracturing again
Make your FIRST break your LAST

INSIST ON ASSESSMENT

Healthiest people ~ Healthiest communities ~ Exceptional service

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Factors affecting fall risk

- Biological/intrinsic
- Behavioural
- Social/economic
- Environmental

Canadian Falls prevention Curriculum 2007
Biological / Intrinsic Risk Factors

- Pertaining to the human body
- Related to the natural aging process, or
- Chronic, acute or palliative health conditions
**Biological / Intrinsic Factors**

- **Mobility Impairments**
  - Poor balance
  - Impaired Gait
  - Muscle weakness
- **Advanced age**
  - Age-related changes
  - Vision
  - Hearing
- **Osteoporosis**

**Poor health & disabilities**

- Dementia
- Stroke
- Parkinson’s disease
  - Arthritis, diabetes
- Low or high blood pressure
- Cardiovascular disease
- Bowel and bladder
- Foot disorders
- Acute illness
- Addictions
**Behavioural Factors**

- History of falls
- Fear of falling
- Medication use
- Excessive alcohol
- Risk taking
- Lack of exercise
- Poor footwear

- Inappropriate clothing
- Assistive devices
- Poor nutrition/hydration
- Addictions
- Substance abuse
Social & Economic Factors

- Living alone
- Social isolation
- Poor family support
- Lack of transportation
- Language barriers
- Illiteracy
- Low income
Environmental Factors

- Home hazards
- Community hazards
- Institutional hazards
BEEACH Prevention Model

Education  
Equipment  
Health Management  
Environment  
Clothing and Footwear  
Activity

Canadian Falls Prevention Curriculum, 2007
Priority Areas: Environment

**INDOOR**
- Doors
- Furniture
- Walkways

**OUTDOOR**
- Entrances well lit
- Level walkways

**PUBLIC PLACES**
- Sidewalks in good repair
- Cross walks

**LIGHTING**
- Adequate
- Non-glare
- Easily accessible switches

**FLOORING**
- Non-slip
- Level thresholds

**STAIRS**
- Uniformity
- Visibility
- Handrails
Mobility Aids: Equipment

- right aid for the
- right person for the
- right reason and the
- right fit to
- keep independence

1993 Eleanor Mills “Never Give Up!”
Hip Protectors: Equipment
Activity

• Balance and gait training
• Focus on posture
• Muscle strength and coordination
• Part of a multifactorial program
Systems that Control Balance

1. Visual
2. Vestibular – balance
3. Somatosensory – body/sensory
4. Musculoskeletal
Myth or Fact

• If I am very careful, stay indoors and walk less, I won’t fall and then I won’t break any bones
Physical Activity for Older Adults: Health Management

Numerous health benefits:
- Decreases the effects of aging
- Builds stronger bones and muscles
- Delays and prevents chronic diseases
- Reduces cancer, heart and stroke risks
- Improves joint flexibility
- Lowers blood pressure
- Controls weight and lowers cholesterol
- Improves balance and strength
Health Benefits (cont)

- Helps control joint swelling and pain associated with arthritis
- Promotes bone strength
- Enhances sleep
- Improves mood and feeling of well being
- Reduces symptoms of anxiety and depression

- Helps maintain the ability to live independently and with confidence
- Reduces the risk of falling
What Type of Activity is Best?

- Aerobic
- Stretches
- Muscle & Bone Strengthening

Tips to Get Active: Physical Activity Tips for Older Adults (65 years and older); Physical Activity Tips for Adults (18-64 years)

www.publichealth.gc.ca/paguide
Aerobic – 4 – 7 days/week

Physical activities that increase your breathing and heart rate. Good for heart, lungs, circulation and muscles

- Brisk Walking
- Swimming
- Dancing
- Cross Country Skiing
- Cycling
- Hiking
- Raking
- Aquafitness
- Biking
Stretches- Daily

Helps to keep your joints healthy and maintain mobility

✓ Stretching
✓ Gardening
✓ Washing and waxing the car
✓ Yoga
✓ Tai Chi
✓ Bowling
✓ Curling
✓ Vacuuming
Muscle & Bone Strength – 2 days/week

Physical activities that challenge your muscles, help keep bones and muscles strong, reduce bone loss, improve posture and balance

✓ Lifting weights, soup cans
✓ Tubing, theraband
✓ Carrying laundry, groceries
✓ Wall push-ups
✓ Vacuuming
✓ Golfing
✓ Dancing
Good choices for physical activities

– Balance training, e.g., Tai Chi, Yoga
– Strength training – using weights, bands or resistance
– Walking
– Chair exercise
– Water fitness
– Dancing
– “Sink” exercises
“Snack” on Activity

Accumulate 3
10 minute
physical “activity snacks”
every day = 30 minutes
Consequences of low bone mass

- Loss of height, curvature of the spine
- Fear of falling
- Fear of breaking a bone
- Broken bones
- Reduced quality of life
- Pain at time of fracture
- Self image changes
Bone health and fracture prevention

• Regular exercise
  – Best exercises for osteoporosis are weight bearing, resistance, balance training and graded dynamic stresses on the bones

• Vitamin D, calcium, protein

• Avoid smoking and excess alcohol

• Bone-enhancing medications – taken as prescribed

• Use mobility aid if needed to improve balance and independence
What makes bones strong?

• Physical activity – weight bearing and strengthening exercises, balance, posture

• Nutrition
  – Calcium
  – Vitamin D
  – Protein
Calcium - 1200 mg each day

- Food sources the best
- Add supplement if you can’t meet the amount in your diet
Calcium supplements

- Calcium carbonate or citrate
- “Elemental” calcium
- Take no more than 500 mg elemental calcium at one time
- Take with meals
- Take with large glass of water
- Medication considerations
Vitamin D

- Needed to absorb calcium in the stomach
- Needed to enhance absorption at the bone
- Improves muscle strength
- Reduces falls and fractures
- Difficult to get enough sunshine in our country
- Recommended to supplement year round
Vitamin D – 800-2000 IU

• Adults over 50
• Diet:
  – Milk 100 IU per cup
  – Yogurt
  – Eggs
  – Chicken liver
  – Salmon, sardines, herring, swordfish
  – Fish oils
Protein

• Calcium, vitamin D and protein work together for bone health (bone mass)
  – increases bone mineralization
  – improves muscle mass and strength
  – reduces fractures
Meat or Plant Sources of Protein

• Men need 3 servings each day
• Women need 2 servings each day
• Serving sizes:
  – 75 g (2 ½ oz) cooked fish, shellfish, poultry, lean meat
  – ¾ cup cooked beans, lentils, chickpeas
  – ¼ cup seeds
  – 2 eggs
  – 2 tbsp peanut butter
Good nutrition and hydration

• Estimated that 30% of older persons living independently suffer from malnutrition

• Needed to enhance bone density, maintain muscle mass and general good health

• 6 or more glasses of non-caffeinated fluids
When to Consult with an Expert?

• When you need an individualized diet or exercise program due to fractures and other health limiting conditions

• When you need a supervised exercise program

• When you are having difficulty being motivated
Motivation

- Motivational Tools
  - Rewards
  - Goal Setting
  - Calendars
  - Pedometers
  - Self-contract
  - Reminders
- Have an “in motion” buddy
- Use walking poles
- Join a group
- Find something that you enjoy doing and have fun!
Goal Setting

• A useful tool that can be used to help you achieve success
• It can help to motivate you
• Useful to see your progress

“You can’t hit a home run unless you step up to the plate. You can’t catch a fish unless you put your line in the water. You can’t reach your goals if you don’t try”

- Kathy Seligman
Schedule it in your day
Accumulate 10,000 Step a Day
What to do if you fall: A plan of action

- Rest. Falling is a shock
- Ask yourself - Are you hurt or unable to get up?
- If you are okay, follow the 5 steps:
  - Hands and knees → crawl to sturdy furniture → one leg at a time → lean forward on furniture and slowly get up one leg at a time → sit → rest → tell someone!
What if you are hurt?

• Call for help
• Try to slide towards a telephone
• Make noise
• Cover yourself with a blanket
• Keep moving
• Public Health Agency of Canada handout – If you fall or witness a fall, do you know what to do?
Where to go for good Information?

- Public Health Agency of Canada/aging and seniors/injury prevention
  [www.publichealth.gc.ca](http://www.publichealth.gc.ca)
- Veteran’s Affairs Canada
  [www.veterans.gc.ca](http://www.veterans.gc.ca)
- Finding Balance Alberta information
  [www.findingbalancealberta.ca](http://www.findingbalancealberta.ca)
- Local physical activity programs
  [www.in-motion.ca](http://www.in-motion.ca)
• The Canadian Chiropractic Association
  www.chiropracticcanada.ca Best Foot Forward falls prevention brochures

• To find a physical therapist in your region
  www.physiotherapy.ca

• Osteoporosis Canada – fracture prevention and risk assessment
  www.osteoporosis.ca
Myth or Fact

• I know at least one thing I can do to improve the health of my bones and to prevent broken bones.
And remember…

Falls can be prevented, except falling in love.
Questions?