## BC INJURY research and prevention unit



The Cost of Falls Prevention

Canada's Patient Safety Virtual Forum, October 30, 2012









## **Presentation Overview**

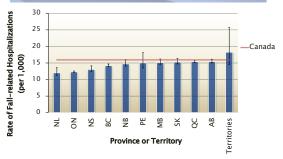
- 1. The cost of falls and fall-related injuries
- 2. Cost-effective Evidence
- 1. Sustainability through integration

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# Canadian Fall-related Hospitalization Rates $65\pm^*$ by Province & Territory 2008/09

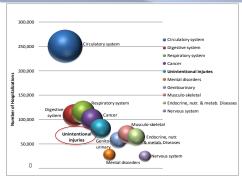


# Canada: Age-standardized Rate of Fall-related Hospitalizations (65+), 2008/09



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## Leading Causes of Hospitalization, 65+ years, Canada, 2005

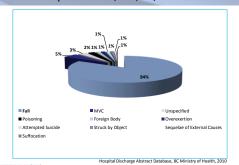


## BC Cost of Fall Injury 2009/2010

- 950 deaths
- 12,006 fall-related hospitalizations
- 162,562 fall related hospital days
- 4,750 fall related hip fractures
- Over \$195 million in direct health costs
- Approximately 33 seniors' fall-related hospitalizations daily
- Approximately twice as many treated and released in EDs

Hospital Discharge Abstract Database, BC Ministry of Health, 2011

## Leading Causes of Unintentional Injury Hospitalizations, 65+, BC, 2008-2009



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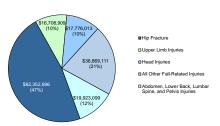
# Average Number Hospital Days, All Causes and Fall-Related, 65+, BC, 2009/2010



Hospital Discharge Abstract Database, BC Ministry of Health, 2011

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### Average Annual Hospital Costs, Fall-Related Hospitalizations, Ages 65+, by Injury Category, B.C., 2005/06-2009/10



Nate: Research betweeky Winglings (RWI) are determined by CHH according to enabling methodologies, dain from fixed year 2005/2006 to present are based on calculations applied to 2005/2006 date. Cost just included operational cost and CM brogatile and in artisend control, Cost update in RVIII and the most second-colciulated costs per RVIII. Cost per RVIII to 2005/2006 to present its are extended 55.00 dates and cost per RVIII and the most second-colciulated costs per RVIII. Cost per RVIII to 2005/2006 to present its are extended 55.00 dates and cost per RVIII and cost per RVIII





## Context for Interventions

- Rapid growth in research in this field over the past decade
- Some intervention programs are best suited to specific settings
- Intervention programs should be matched with the scope of practice of those who deliver them
- Many will require partnerships



Factors that influence the adoption of Evidence

Professional Experience and Expe

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## Best practices

• Need to combine sound research evidence with practice experience and clinical judgment to create 'best practices'

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## Levels of Evidence

Categories	of Evidence	Strength of Recommendation
Class I:	Evidence from systematic reviews and meta- analysis of randomised controlled trials.	A: Directly based on Class I evidence.
Class II:	Evidence from at least one properly designed randomized controlled trial.	B: Directly based on Class II evidence or extrapolated recommendation from Class I evidence.
Class III:	Evidence from comparative studies, correlation studies and case-control studies.	C: Directly based on Class III evidence or extrapolated recommendation from Class I or II evidence.
Class IV:	Evidence from case studies or expert committee reports or opinions.	D: Directly based on Class IV evidence or extrapolated recommendation from Class I, II or III evidence.

Adapted from the Clinical practice guideline for the assessment and prevention of falls in older people commissioned by the National Institute for Clinical Excellence (NICE)





## **Community Interventions**

- Multifactorial risk-factor assessment and management of assessment results (for cognitively intact persons) (A)
- Component of multifactorial approach include:

  - Environmental assessment and modification for individuals with a **high risk of falling** (A)
     Exercise with balance training (A)
     Appropriate use of assistive devices, especially an anti-slip shoe device worn in icy conditions (A)
  - Medication review and modification, particularly psychotropics

  - Managing visual concerns (A)
     Appropriate treatment of medical conditions, including vision, cardiovascular disorders and hypotension and other cardiovascular considerations (A)
  - Treatment of postural hypotension (B)



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## Community Interventions

- Single factor interventions:
  - Appropriate use of assistive devices (A)

  - Home hazard assessment and modification among individuals with high risk of falling (A) Multiple component exercise programs group or home based (A)
  - pased (A) Exercise program for both strength and balance training such as Tai Chi (A) Timely treatment of visual impairments, particularly cataract surgery (A) Cardiac pacing for caridoinhibitory carotid sinus hypersensitivity (A)

  - hypersensitivity (A)
    Review and modification of medications, particularly psychotropics (A)
    Vitamin D supplementation may reduce falls in people with lower Vitamin D levels (A)
    Appropriate treatment of medical conditions including visual problems, cardiovascular disorders and cardiac arrhythmias (B)















## Residential

- Multifactorial interventions:
  - Environmental modification (B)
  - Assessment on appropriate use of assistive equipment B)
  - Review and modification of medications, particularly psychotropics (B)
  - Safer transferring techniques and ambulation (B)
  - Creation of a multidisciplinary team (B)
  - Completion of a general medical assessment (B)
  - Creation of an individual fall prevention plan (B)
  - Including a comprehensive program of interventions (B)

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- Staff committed to fall prevention (B)





## Residential

- · Single interventions:
  - Review and modification of medications, particularly psychotropics (B)
  - psycnotropics (B)

     Use of fall diaries kept by nursing staff to record information about the falls and circumstances around the fall as well as prevention information for future falls (B)

     Structured multidisciplinary assessment in the immediate post-fall period (e.g., 7 days) (B)

     Increased supervision amongst frailest residents (B)

     Volunteer Companions for those at highest fall risk (C)

     Vitamin D and calcium supplementation (B)

  - Exercise programs (B)
  - Wearing shoes at all times (C)

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<u>[</u>	F)	P	C
Refer of		i e	.5.4

Residential
<ul> <li>Interventions to prevent fall-related injuries</li> <li>Use of Hip protectors (A). Success and effectiveness of the reduction of fractures is based on the acceptance of people wearing them and adherence (continuously wearing them in a correct manner)</li> <li>Selection of sub-floor materials and covering</li> </ul>

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## **Acute Care**



- Interventions targeting multiple risk factors and supervised exercise are effective for long stay patients (A)
- Patient education (B)
- Vitamin D and calcium (B)
- Review and modifications of medications
- Hospital discharge risk assessment and planning (C)
- Delirium avoidance programs (C)Selection of sub-floor materials and covering (C)
- Limited research conducted on the effectiveness of use of physical restraints, alternative to restraints and chair alarms





## Overarching Recommendation

• The most effective falls prevention interventions are those that use a multifactorial approach that targets selected individuals or groups of older persons based on their risk profiles







## **Cost Effectiveness Evidence**

Most cost effective single interventions (Church et al. 2012; Colon-Emeric et al. 2003; Davis et al. 2011; Frick et al. 2012; Honkanen et al, 2006; Singh et al. 2004; Waldegger et al. 2003)

- Home modifications
- Vitamin D supplements
- Group Tai Chi exercises
- Resistance training
- Management of psychotropic medications
- Hip protectors (in residential LTC and very old in community)

## **Cost Effectiveness Evidence**

Multifactorial interventions (Jenkyn et al. 2012; Markle-Reid et al.; Sach et al. 2012):

- No savings shown for general population of community-dwelling seniors
- Cost effectiveness shown for high-risk community seniors and institutionalized seniors

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## Sustainability Framework for Fall Prevention in Canada



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### A Public Health Approach to Fall Prevention Among Older Persons in Canada

Vicky Scott, Pro. In Ab.c.d.\*, Brandon Wagar, Pro<sup>e</sup>, Alison Sum, Ma<sup>b</sup>, Sarah Metcalfe, Iss.<sup>a</sup>, Lori Wagar, Ima<sup>b</sup>

KEYWORDS
• Seniors • Fall • Prevention • Canada • Aging • Injury

Experiencing a fall can have a devastating physical and psychological effect on an older person, resulting in disability, chronic pain, loss of independence, reduced quality of life, and even death. The risk of falling is complex and multifactorial. Reducing the incidence and severity of falls among a rapidly aging population demands a proactive, systematic, earl multileactival approach to prevention. In Canada, many policy malater, seesanchers, and practifications are applying a public health approach of the proclem.

Disclosure: The authors have nothing to disclose. Much of the work reflected in this artists was made possible through points from the Public Much of the work reflected in this artists was made for contributions from the Similar Collections (Ministry In Health Unity and Sport and the Candida Institute for Health Informa-tion, Western Candida.

CV Will IVA Candida (Park State of the Candida Institute of Health Informa-tion, Western Candida).

## **Canadian Falls Prevention Curriculum**

For health professionals and community leaders to learn how to design, implement and evaluate a fall prevention program

Facilitated 2-day Workshop or On-line Course Workshops offered through provincial leads

E-learning offered through:

U. Victoria Continuing Education - in English

Campus St. Jean at U. Alberta - in French

Project lead: Dr. Vicky Scott Coordinator: Sarah Metcalfe (spph.cfpc@ubc.ca) URL: www.canadianfallprevention.ca

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## **B.C. Fall Prevention Programs and Products**

### Community



Home Care



Residential Care







Aboriginal Communities



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## **Primary Care Fall Prevention Multimedia Package**

- Provider resources
- Assessment tools
- Patient education



## **Provider Resources**

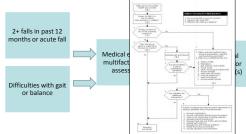
## Fact Sheets

- 1. Defining the Problem
- 2. Identifying Fall Risk Factors
- 3. Fall Assessment & Interventions
- 4. Medication review
- 5. Revised ABS BGS Guidelines
- 6. Case study video



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# American/British Geriatric Society Guidelines, 2010



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## **Primary Care Fall Prevention Training Video**

## Case Study



## Balance and Mobility Tests



## **Assessment Tools**

## Fall Risk Assessment Checklist

Tests for Balance and Mobility

ck Your <b>H</b> tsi				100
2) No 1	have fallen in the last 6 months.	Learn more on how to reduce your fall risk, as people who have fallen are more likely to fall again.		
2) No 6	use or have been advised to use a ane or walker to get around safely.	Talk with a physiotherapist about the most appropriate walking aid for your needs.		111
1) No 5	iometimes, I feel unsteady when I im walking.	Exercise to build up your strength and improve your balance, as this is shown to reduce the risk for falls.	1	Report Care And
1) No fi	steady myself by holding onto umiture when walking at home.	Incorporate daily balance exercises and reduce home hazards that might cause a trip or slip.		Name in the Owner Cons
1) No I:	am worried about falling.	Knowing how to prevent a fall can reduce fear and promote active living.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Section In case of the last
1) No ii	need to push with my hands to tand up from a chair.	Strengthening your muscles can reduce your risk of falling and being injured.	1/	(ESTATE OF THE PARTY OF THE PAR
1) No [	have some trouble stepping up- into a curb.	Daily exercise can help improve your strength and balance.	1	A separate and
1) No I	often have to rush to the tollet.	Talk with your doctor or incontinence specialist about solutions to decrease the need to rush to the tollet.		And the factor of the
1) No I	have lost some feeling in my feet.	Talk with your doctor or podiatrist, as numbriess in the feet can cause stumbles and falls.		Petition of the Assessment
	take medicine that sometime nakes me feel light-headed or nore tired than usual.	Talk with your doctor or pharmacist about medication side effects that may increase the risk of falls.	1	Contract of the Contract of th
1) No ii	take medicine to help me sleep or mprove my mood.	Talk with your doctor or pharmacist about safer alternatives for a good night's sleep.		
1) No I	often feel sad or depressed.	Talk with your doctor about symptoms of depression, and help with finding positive solutions.		
onel	If you scored 4 points or more, you	arentheses for each "yes" response, a may be at risk for falling, octor to find wan to reduce your risk.		

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## **Patient Education**



**PCFP Evaluation 2012** 

	Purpose
•	Evaluate the effectiveness of the resources to increase knowledge and/or
	bring about changes in practice  Develop and implement a marketing plan for disseminating the Primary
	Care Fall Prevention resources to physicians and other primary care providers across B.C.
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	Sample
	Sample
	24 family practice physicians with a large portion of elderly patients expressed interest in participating in the review and evaluation of the PCFP Multimedia Package over 6-8 weeks
	> 17 completed the Initial Survey and were sent the fall prevention
	package to review
	➤ 11 completed the Final Interview and Survey
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	Feedback on Clinician Resources
•	Physicians indicated that the materials raised and/or reinforced
	their awareness of fall risks and prevention strategies

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Indicated that the materials were clear, useful and comprehensive
 Assisted in initiating conversation about fall risk
 Primary criticism was the volume of material

Miller & Hollander, 2012

## **Feedback on Patient Education Resources**

Physicians felt that they could be used to:

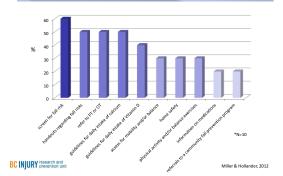
- Start conversations with patients regarding their risk of falling
- Reinforce concepts discussed with the physician or an allied health professional (e.g., PT/PT, dietitian, pharmacist, etc.)
- Serve as a resource for seniors regarding fall risks and prevention strategies
- Recommended that some of the materials be available electronically for patients



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Miller & Hollander, 2012

## **Likelihood for Changes in Practice\***



## **Delivery**

Chronic Disease Management Module Practice Support Program General Practice Services Committee www.pspbc.ca





SeniorsBC.ca

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# 

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## Thank you!

www.seniorsbc.ca (> Fall Prevention > Are you at risk?)

www.health.gov.bc.ca/prev ention/fallprevention.html

www.injuryresearch.bc.ca

www.hiphealth.ca/CEMFIA

