

2008

Falls Prevention Resource Guide



How or whether we prioritize falls prevention in our community may depend on whether we have the right information at the right time to make such a change. The following resources have been organized to support decisions according to the readiness for making change.

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Do you need more information to justify falls prevention action?

The following falls-related data may be useful as you

- Secure the necessary **resources**
- Identify who is at greatest **risk**
- Tailor prevention **strategies** to identified risk profiles
- Monitor effectiveness of prevention programs

Statistics on seniors' falls

- Falls are the second leading cause, after motor vehicle collisions, of injury-related hospitalizations for all ages, accounting for 29% of injury admissions.¹
- Seniors age 65 and over accounted for 40% of all injury hospitalizations, and the largest proportion of all injury hospitalizations. Falls accounted for 85% of injury hospitalizations in this age group.²
- The fall-related injury rate is nine times greater among seniors than among those less than 65 years of age.³
- Almost half of seniors who fall experience a minor injury, and 5% to 25% sustain a serious injury such as a fracture or a sprain.⁴
- Falls cause more than 90% of all hip fractures in seniors and 20% die within a year of the fracture.⁵
- Families are often unable to provide care, and 40% of all nursing home admissions occur as a result of falls by older people.⁶
- Even without an injury, a fall can cause a loss in confidence and a curtailment of activities, which can lead to a decline in health and function and contribute to future falls with more serious outcomes.⁷
- A 20% reduction in falls would translate to an estimated 7,500 fewer hospitalizations and 1,800 fewer permanently disabled seniors. The overall national savings could amount to \$138 million annually.⁸



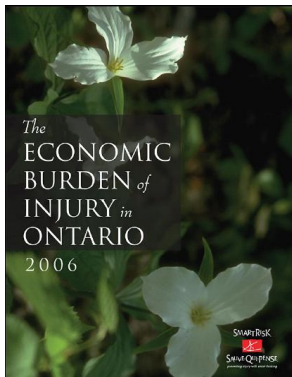
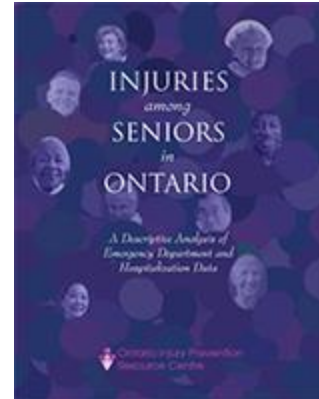
From:

http://www.phac-aspc.gc.ca/seniors-aines/pubs/seniors_falls/index.htm

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

From:

http://www.oninjuryresources.ca/downloads/seniors_report.pdf



- It is estimated that 40% of falls leading to hospitalization are related to hip fractures.
- Falls were the most costly unintentional injury, totaling more than \$1.9 billion. Seniors 55+ years of age accounted for \$962 million, or almost half of falls costs in Ontario.
- The costs of unintentional falls for seniors 55+ in the Mississauga Halton LHIN were \$51 million in 1999 (compared to \$22 million for children 0-14).
- The proportion of Ontarians aged 65 and older will nearly double from 13% of the total population in 2004 to 24% in 2031.
- for every \$1 invested in comprehensive community-based falls prevention for high risk seniors, \$7 in healthcare costs can be saved.

From:

http://207.35.157.99/burden/Ontario_Economic_Burden_of_Injury.pdf

fall1 [fo:l] *verb* — *past tense* fell [fel];
past participle 'fallen
 unintentionally coming to rest on
 the ground, floor or other lower
 level with or without an injury

In-hospital hip fractures:

- One out of every 1263 Canadian seniors admitted to hospital will suffer a fractured hip during hospitalization (2003-6)
- Highest risk = oldest old, women and surgical patients
- Risk factors = gait and balance disturbances, use of tranquilizers and evidence of previous stroke
- Risk reduction = clinical assessments, modifying the physical environment (e.g. adequate lighting and eliminating spills), using other tools to minimize injury (e.g. protective equipment including hip protectors or ways to identify high-risk patients) and patient and staff education

From:

http://www.icis.ca/cihiweb/en/downloads/Patient_Safety_AIB_EN_070814.pdf



In-hospital patient falls:

- Affect approximately 2% to 17% of patients during their hospital stay [1-5].
- Rates vary from 1.4 up to 17.9 falls per 1,000 patient days depending on hospital type and patient populations [5-17].
- Related injuries occur in 15% to 50% of the patients, including major injuries such as fractures or lacerations in 1% to 10% [1,6,8,9,13-15,18-21].
- Other: fear of falling with subsequent activity restriction [22,23], prolonged hospital stay [24], and legal liability [25].

From:

Schwendimann R et al (2006), "Falls and consequent injuries in hospitalized patients: effects of an interdisciplinary falls prevention program", BMC Health Services Research 2006, 6:69 accessed 18 January 2008 at

<http://www.biomedcentral.com/content/pdf/1472-6963-6-69.pdf>

Factors affecting falls risk

Biological / Intrinsic Factors

- Mobility
- Age-associated changes
- Poor health / disabilities

Environmental Factors

- Home hazards
- Community hazards
- Institutional hazards

Social & Economic Factors

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

Behavioural Factors

- History of falls
- Fear of falling
- Medication use
- Excessive alcohol
- Lack of exercise
- Risk taking
- Assistive devices
- Footwear/clothing



Risk Factors for Fall-related Injury

- Osteoporosis
- Quadriceps strength and postural sway
- Chronic conditions
- Gender
- Medications
- Flooring



In the community

Falls risks among active seniors:

- mobility status
- exposure to hazardous environments
- risk-taking behaviours (e.g. climbing ladders)

Falls risks among those requiring home support services:

- health problems such as arthritis, depression,
- use of psychotropics
- functional consequences of a chronic disease.

From: Scott V et al (2007), "Multifactorial and functional mobility assessment tools for fall risk among older adults", Age and Ageing No 36: 130-139

In acute care

Risk Factors in Acute Care

- Acute illness and co-morbidities e.g. hip fracture, stroke, pneumonia
- Impaired mobility, gait instability
- Agitated confusion, impaired mental status
- Urinary incontinence/frequency (or need for assisted toileting)
- Fall history
- Unfamiliar environment
- Medications associated with fall risk and those for acute health symptoms such as pain



In long term care

Risk Factors in Residential Settings

- Impaired cognition
- Wandering or impulsive behavior
- Psychotropic medications
- Multiple medications
- Being female
- Incontinence and urgency
- Lack of exercise
- Mobility problems
- Unsafe environments
- Low staffing levels



One might argue that development of screening tools to predict falls in high-risk populations such as residents of nursing homes is of limited use and that all residents should be considered high risk and therefore receive an assessment linked to evidence-based interventions.

From: Scott V et al (2007), "Multifactorial and functional mobility assessment tools for fall risk among older adults", *Age and Ageing* No 36: 130-139



The Canadian Falls Prevention Curriculum is presented through a two day workshop that will give participants the knowledge and skills needed to operate from an evidence-based approach to seniors falls and fall-related injury prevention, including:

- a) an approach to select interventions consistent with proven prevention strategies;
- b) an understanding of how to integrate falls prevention programming into existing seniors' health services policies and protocols; and
- c) knowledge of appropriate evaluation and dissemination techniques.

<http://www.oninjuryresources.ca/cfpc/>

Are you wondering about options for falls prevention?

Best Practices Interventions

Best practices are chosen from research findings which have been reviewed for methodology quality and evidence strength by a review panel who also provide expert clinical perspective. Letters assigned (A being strongest) denote:

- (A)** directly based on Class I evidence i.e. from at least one randomized controlled trial or meta-analysis of many directly concerned with falls reduction
- (B)** directly based on Class II evidence i.e. from at least one controlled study (not random) or evidence from at least one other type of quasi-experimental study or extrapolated from Class I evidence
- (C)** directly based on Class III evidence i.e. from non-experimental studies (e.g. comparative, correlation, or case-control studies) or extrapolated from Class I or II
- (D)** directly based on Class IV evidence i.e. from expert committee reports, opinions and/or reputable sources of clinical expertise

In the community

Community Interventions

- Multifactorial risk factor assessment and management of assessment results (for cognitively intact persons) **(A)**
- Single factor interventions:
 - Exercise programs with balance training research **(B)**
 - Facilitated modification of environmental hazards **(B)**
 - Behavioural and education programs **(B)**
 - Review of medications **(C)**
 - Assistive devices **(C)**



Suggestions for sports and physical activity departments/centres

- Make Tai Chi sessions and other appropriate activities available in community settings
- Train specialized exercise instructors in effective fall prevention exercise
- Promote leisure activities involving movement

Todd C Skelton D (2004) What are the main risk factors for falls among older people and what are the most effective interventions to prevent falls? Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/document/E82552.pdf>, accessed 13/09/07)

Other suggestions:

Preventing Falls: What works – a CDC- National Centre for Injury Prevention and Control compendium of effective community-based interventions from around the world 2008

http://www.cdc.gov/ncipc/preventingfalls/CDCCompendium_030508.pdf

Active Independent Aging: a community guide for falls prevention and active living <http://www.falls-chutes.com/guide/english/intro/index.html>

How to develop community-based falls prevention programs for older adults

http://www.cdc.gov/ncipc/preventingfalls/CDC%20Guide_030508.pdf

In public health

Suggestions:

- **Education** for older people, relevant health and social care professionals
- **Multi agency** meetings and working groups for continued dialogue
 - Professional facilitation to identify and strategize gaps and achieve agreement on roles, referral triggers, eligibility for referral and distribution of patient loads
 - Multi agency involvement in multifactor risk assessment and multifactorial intervention
 - Clear policies and lines of responsibility for falls management, procedures for all professional groups and a consensually designed referral network
- **Local strategies** based on current country-based falls prevention guidelines

From World Health Organization, March 2004 <http://www.euro.who.int/document/E82552.pdf>

- Add falls **assessments** to current clinics e.g. influenza vaccination.
 - Basic mobility tests,
 - Vision checks,
 - Medication reviews
 - Questions about prior falls and contributing factors.
 - Handouts on prevention strategies
 - Contact information on local resources such as seniors' exercise programs, reliable home modification contracts, equipment loans
- Collaboratively work with **community partners** (e.g. municipalities, recreation centres, seniors' organizations, etc)

- promote **safety and access** improvements in public places, home modifications, and appropriate seniors exercise programs
- **Collect data** to monitor risk and impact of falls regionally, across all sectors of the health care delivery system and in the community
- **Integrate** falls prevention with chronic disease prevention
- **Collaborate** with other organizations
 - develop, implement and evaluate the effectiveness of programs
 - provide education to health workers on safer environments
- Provide learning opportunities for health employees on the **best practices** for designing, implementing and evaluating falls prevention programs
 - inservices, training sessions, conferences
 - curricula of local colleges and university
 - workshops to identify local actions
- Seniors must be actively involved in falls prevention programming. Seniors have insider knowledge to tailor programs and will be more receptive to **senior-friendly** initiatives

From a special report from BC's Provincial Health Officer (2004)

http://www.injuryresearch.bc.ca/Publications/Reports/FallPrevention_PHO.pdf



Sample falls prevention model

<https://www.health.vic.gov.au/agedcare/maintaining/falls/downloads/fallspreventmodel.doc>

In primary care

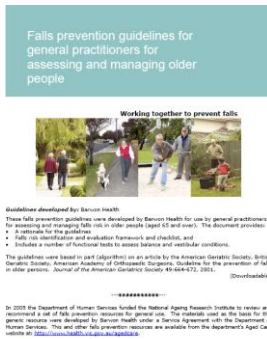
Suggestions for Primary health teams/practitioners

- Include individualized **risk assessment** in care package for frail older people
- Encourage patients to be **physically active**
- Review **medications** and physical activity of at risk
- Investigate risk of **osteoporosis** and treat as necessary

From: World Health Organization, March 2004

<http://www.euro.who.int/document/E82552.pdf>, accessed 13/09/07)

Falls prevention guidelines for general practitioners



<http://health.vic.gov.au/agedcare/maintaining/falls/downloads/guideforgps.pdf>

In community care

In older people living in their own homes, **assessment** of major risk factors and appropriate **multifactorial interventions** could include:

- **Gait** training and advice on appropriate use of assistive devices
- Review and modification of **medications**, particularly psychotropics
- **Exercise** programs with balance training
- Treatment of postural **hypotension**
- Appropriate treatment of **medical conditions** including visual problems, cardiovascular disorders and cardiac arrhythmias
- Reduction or withdrawal of **psychotropics**
- Modification of environmental **hazards**

However

- Staff education and self-management programs without measures to implement recommended changes are not effective in community-based settings

Todd C Skelton D (2004) What are the main risk factors for falls among older people and what are the most effective interventions to prevent falls? Copenhagen, WHO Regional Office for Europe (Health Evidence Network report; <http://www.euro.who.int/document/E82552.pdf>, accessed 13/09/07)

Recommendations from BC's Prevention of Falls and Injuries among the Elderly (provincial health officer, 2004)

- Initial intake assessments should be done by case managers trained in falls risk screening and the assessment of contributing factors to prior falls. This information should be used to design a **falls prevention protocol** to be included in the client care plan. Care providers should have knowledge and skills to conduct **ongoing falls risk screening which triggers timely referral** to appropriate resources. Therapists should be supported in applying their knowledge and intervention.

- Seniors should be encouraged to **talk to pharmacists** about medication use and those medications or combinations that might contribute to falls
- Where a home hazard is identified as a fall risk, personnel or programs should be developed to **address the home modifications** and help the elderly make environmental changes for a reasonable cost.
- Senior clients must be **actively involved** in the design, implementation and evaluation of their falls prevention.

From a special report from BC's Provincial Health Officer (2004)


http://www.injuryresearch.bc.ca/Publications/Reports/FallPrevention_PHO.pdf



community flow.pdf

Figure 1 Proposed pathway in community care for falls prevention and management

In hospitals

<p>Acute Care Interventions</p> <ul style="list-style-type: none"> • Multifaceted interventions (B) • Evidence to support an increased risk of injury from a fall with use of restraints (B) • Alternatives to restraints (B) • Hospital discharge risk assessment and planning (C)


All patients require standard falls prevention approach (e.g. address environmental and other systemic factors)

Highest risk require additional targeted interventions (e.g. increase observation by use of "sitters", bed or chair alarms, closer position to the nursing station, or harm reducing hip protectors)

From: Hill KD, Vu M, Walsh W (2007), "Falls in the acute hospital setting: impact on resource allocation", Australian Health Review, 08/01/2007 accessed January 18, 2007 at <http://www.encyclopedia.com/doc/1G1-167307401.html>

Suggestions for multifaceted interventions

- least restraint
- fall alarm devices
- exercise
- wooden flooring
- supplemental calcium and vitamin D
- medication review

From: Oliver J et al, "Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: systematic review and meta-analysis" BMJ January 2007, pp334:82

- **Restraint alternatives** (lower bed, floor mats, transfer and exercise training, alarm devices, etc) have proved beneficial. Bed alarms appear promising
- **Discharge risk assessment and planning** for older people;
- **Appropriate referral** to continued home health care or residential care if needed
- **Assessment** of main risk factors with appropriate **referral and advice**
- **Follow-up** of older patients seen because of falls and referral to specialized outpatient hospital-based falls service, if available

From World Health Organization, March 2004 <http://www.euro.who.int/document/E82552.pdf>

- **Admission screening** for falls risk
 - prior fall history,
 - prior fall injury,
 - mobility,
 - vision,
 - cognition.
- **Detailed falls assessment** for high risk on admission
 - **updated** with changing health conditions and steps taken to reduce identified risk.
- **In-house fall and fall injury surveillance** to enable hospital-wide implementation of preventive and quality improvement measures
 - locations of falls
 - pre-fall circumstances of falls in hospital
- **Detailed falls assessments** of elderly patients at hospital discharge
- **Referral at discharge** for appropriate intervention
 - medical appointment
 - pharmacist consultation
 - exercise program
 - environmental hazard modification

From a special report from BC's Provincial Health Officer (2004)

http://www.injuryresearch.bc.ca/Publications/Reports/FallPrevention_PHO.pdf



Acute Care Hospitals
falls flow.pdf

Figure 2 Proposed in hospital pathway for falls prevention and management

Minimising the Risk of Falls & Fall-related Injuries

Guidelines for Acute, Sub-acute and Residential Care Settings

Guidelines

Sample guidelines for acute, sub-acute and residential care settings

<http://www.health.vic.gov.au/qualitycouncil/downloads/falls/guidelines.pdf>



Sample quick reference poster to identify falls risks

http://www.health.vic.gov.au/qualitycouncil/downloads/falls/risk_poster.pdf



Prevention of Falls and Fall Injuries in the Older Adult,
Registered Nurses' Association of Ontario, 2005

http://www.mao.org/Storage/12/617_BPG_Falls_rev05.pdf

In long term care

Residential Care Interventions

- Multifactorial interventions that include environmental evaluation and intervention (**A**)
- Single interventions:
 - Vitamin D and calcium supplements (**B**)
 - Gait training and advice on use of assistive devices (**B**)
 - Review and modification of medications
 - Nutritional review and supplementation (**B**)
 - Staff education programs (**B**)
 - Exercise programs (**B**)
 - Environmental modifications (**B**)
 - Post-fall problem-solving sessions (**B**)
 - Hip protectors (**B**)



All residents (including those with dementia and cognitive impairment)

- Vitamin D and calcium supplementation
- Gait training and advice on appropriate use of assistive devices
- Review and modification of medication, especially psychotropics
- Nutritional review and supplementation
- Staff education programs
- Exercise programs for those at high risk
- Environmental modification
- Post-fall problem-solving sessions
- Hip protectors

Suggestions:

- **exercise** sessions or physical activity options for residents
- home environment **safety** review
- post-fall **re-assessment** for reversible risk factors
- hip protectors for **harm reduction**

From World Health Organization, March 2004
<http://www.euro.who.int/document/E82552.pdf>

- Monthly surveillance (Istandard tool) and **recordkeeping** (database) of incidence of falls
- Incident reviews at staff meetings to **problemsolve** other options
- **Detailed falls assessments** on admission and at regular intervals and/or following a fall and health changes.
- **Assessment- triggered interventions** such as medication review, exercise programs or transfer training
- Encourage use of hip protectors for **harm reduction**
- **Physio- and occupational therapists** should assist in falls prevention for individuals or as part of program development

From a special report from BC's Provincial Health Officer (2004)

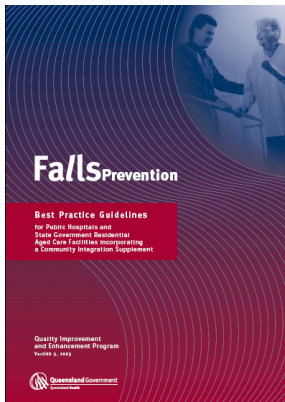
http://www.injuryresearch.bc.ca/Publications/Reports/FallPrevention_PHO.pdf

Components of a comprehensive falls prevention plans:

- A facility-wide collaborative approach to falls prevention including a **multidisciplinary team** with direct responsibility for the implementation and evaluation of fall prevention activities
- An **education and awareness raising** program for all staff, support staff, residents, family members and visitors
- A falls **surveillance** system for monitoring the nature and severity of falls and contributing factors
- A system for **assessing** fall and injury risk upon admission and over time
- A **visual mechanism** for identifying high risk falls and implementing tailored prevention plans
- A **policy** for investigating facility-wide fall and injury patterns and using a collaborative process for prioritizing and implementing appropriate preventions
- An **evaluation plan** designed to determine the effectiveness of specific strategies and overall approaches to falls prevention
- A process for recognizing and **rewarding the efforts** of staff and residents for their falls prevention efforts

From: Scott VJ et al. (2003), "A Review of the Literature on Best Practices in Falls Prevention for Residents of Long-Term Care Facilities", accessed at

<http://www.injuryresearch.bc.ca/Publications/Final%20LTC%20Lit%20review.pdf>



http://www.health.qld.gov.au/fallsprevention/best_practice/falls_best_practice.pdf



Long term care
flow.pdf

Figure 3 Queensland model for falls risk assessment prevention and management

In governments

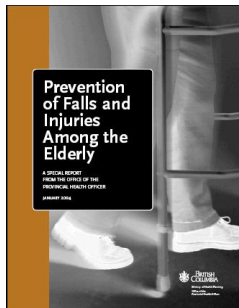
Suggestions for governments

- Prioritize fall prevention in national targets for injury prevention
- Prioritize fall and fracture prevention in health provision for older people
- Prioritize health promotion information and policy on physical activity among older people
- Advocate the inclusion of injury prevention issues in pre-retirement courses
- Support nationally recognized training in delivery of appropriate forms of physical activity

From World Health Organization, March 2004 <http://www.euro.who.int/document/E82552.pdf>

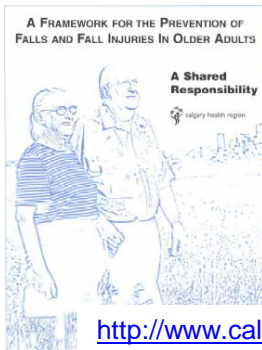
For further recommendations from work done in other jurisdictions:

British Columbia



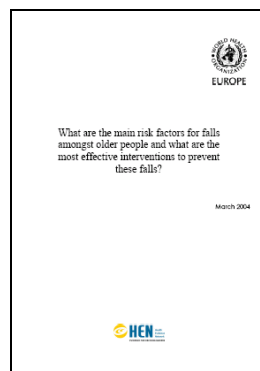
http://www.injuryresearch.bc.ca/Publications/Reports/FallPrevention_PHO.pdf

Alberta



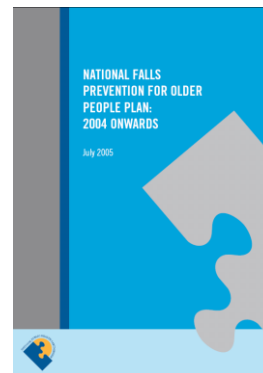
<http://www.calgaryhealthregion.ca/hecomm/IPC/Resources/FrameworkforOlderAdults.pdf>

World Health Organization



<http://www.euro.who.int/document/E82552.pdf>

Australia



<http://www.nphp.gov.au/publications/sipp/fallplan.pdf>

*“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 profile**”*

Canadian Falls Prevention Curriculum



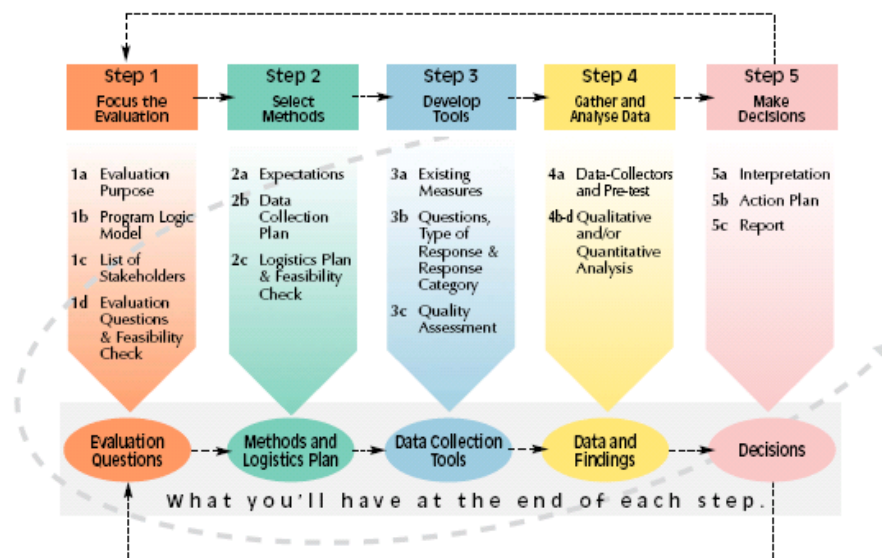
Are you wondering whether falls prevention is effective in your work?

Why evaluate?

- To determine what you have accomplished
- To promote understanding about which strategies help prevent falls and which don't
- To contribute to the body of knowledge about falls prevention
- To increase the effectiveness of project and program management
- To support expansion of your program and./or illustrate why it needs continued funding

Public Health Agency of Canada: Program Evaluation Toolkit

The diagram below illustrates the *Tool Kit's* approach to program evaluation.



<http://www.phac-aspc.gc.ca/php-psp/toolkit.html>

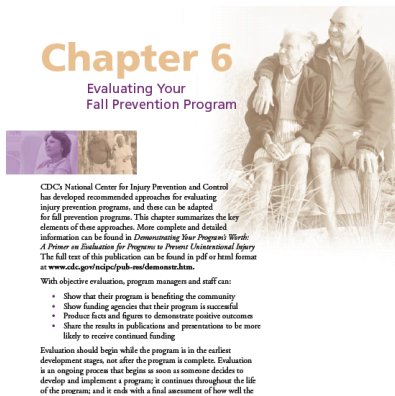


Ontario Injury Prevention Resource Centre

Helping injury prevention practitioners reduce injury in Ontario

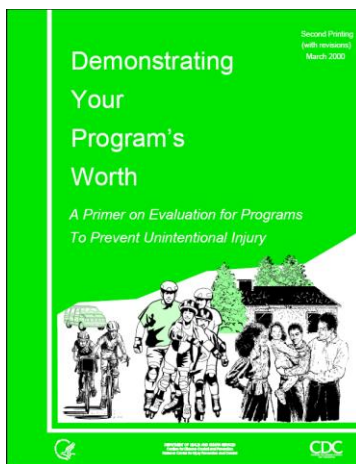
Evaluation Toolkit

http://www.oninjuryresources.ca/resources/toolkit_of_evaluation_methods/toolkit_of_evaluation_methods.html



Chapter 6 Evaluating your fall prevention program

http://www.cdc.gov/ncipc/preventingfalls/CDC%20Guide_030508.pdf



Demonstrating your

Program's Worth

<http://www.cdc.gov/ncipc/pub-res/demonstr.htm>

Evaluation is one way of listening to the people you are trying to help

We can collect information from clients:



sample community
seniors falls surveillar

Figure 4 sample falls surveillance tool

We can collect information from agencies:



sample agency falls
prevention survey .pc

Figure 5 sample falls intervention survey

Broader data sources

From Ontario Injury Prevention Resource Centre

<http://www.oninjuryresources.ca/consultations/>

Data Request for the Mississauga Halton LHIN- 2005/06 data

Completed by the Ontario Injury Prevention Resource Centre on February 4, 2008

Selection criteria

- All injury cases
- LHIN=Mississauga Halton (Cases are categorized according to LHIN of residence)
- Age 65+ years
- Falls are defined using ICD-10 codes W00-W19.

Table 1. Number of hospitalizations and average length of acute care hospital stay for all injuries and falls among those 65+ years of age (Acute care hospitalizations, Mississauga Halton LHIN, 2005/06)

Age group	All injuries		Falls	
	Number	Average length of stay (in days)	Number	Average length of stay (in days)
65-69 years	168	9.3	113	8.3
70-74 years	209	11.8	142	11.4
75-79 years	313	10.6	243	9.9
80-84 years	425	10.6	349	10.3
85+ years	529	11.2	457	10.5
Total for 65+ years	1,644	10.8	1,304	10.2

Source: Discharge Abstract Database/CIHI

Table 2. Number of emergency department visits for all injuries and falls among those 65+ years of age (Mississauga Halton LHIN, 2005/06)

Age group	All injuries	Falls
	Number	Number
65-69 years	1,615	732
70-74 years	1,546	800
75-79 years	1,670	984
80-84 years	1,642	1,145
85+ years	1,692	1,282
Total for 65+ years	8,165	4,943

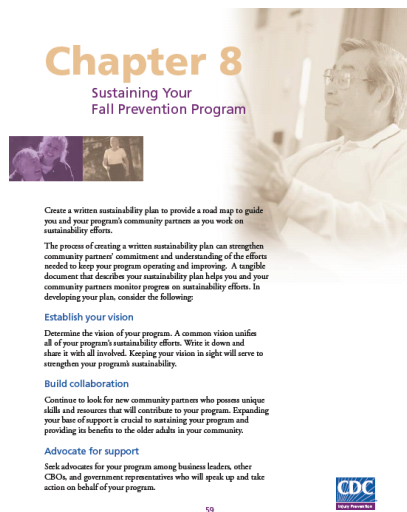
Source: National Ambulatory Care Reporting System/CIHI

The Health Canada/Veterans Affairs Canada Falls Prevention Initiative funded a number of fall prevention projects and found that the projects that were sustained at the end of the Initiative were those with strong community **partnerships**, strong **leadership**, and additional **financial support**.¹⁴⁸

Sustainability was most likely if fall prevention projects:

- addressed sustainability in the initial planning stages of projects;
- had key champions to show leadership;
- involved a wide range of stakeholders, including local officials, service groups, universities, provincial and national organizations, and particularly seniors;
- focused on specific project components rather than entire programs (e.g., resources, partnerships and volunteer networks);
- supported outcomes such as increased community interest and awareness;
- had communities with previous capacity for and experience in delivering fall prevention initiatives;
- secured funding for a project coordinator;
- had 'train the trainer' initiatives;
- secured funding from multiple partners; and
- integrated falls projects into the broader goals of the organization.

http://www.phac-aspc.gc.ca/seniors-aines/pubs/seniors_falls/chapter5_e.htm



- Vision
- Collaboration
- Support

Chapter 8 Sustaining your fall prevention program

http://www.cdc.gov/ncipc/preventingfalls/CDC%20Guide_030508.pdf