World Heath Organization Report: Prevention of Falls in Older Age

**Background Paper:** Falls Prevention: Policy, Research and Practice

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**Introduction**

Without concerted action by policy makers, researchers and practitioners, the economic and societal burden of falls will increase by epidemic proportions in the next few decades. As depicted in Figure 1, policy, research and practice are interconnected components necessary for an effective and sustainable program of falls prevention for older persons. The complex and multifactorial nature of fall risk among a rapidly aging population demands a proactive and systematic approach to prevention. The role of policy in such an approach is to provide the infrastructure and support essential for the integration of falls prevention into practice. Research is required to provide evidence to support the effective application of prevention interventions. Practice is where evidence is applied according to the standards and protocols set by policy.

**Figure 1**
Policy

A policy is a governing principle that serves to guide decision-making and action that is agreed upon by a group of people with the authority to carry it out and enforce it (1). To effectively address the growing problem of falls in an aging society, healthy public policies are needed to provide vision, set priorities and establish institutional standards (2). A healthy public policy is one that is defined by social and physical environments that enable citizens to lead safe and healthy lives (3). Such policies are shown to arise from a systematic process of building capacity for action that draws upon available evidence, integrated with community preferences, political realities and available resources (4).

Policies are created by various levels of government or by institutions, community organizations, professional associations and agencies (1). The target population for public policies can be the general population or specific population groups. In all cases, policies are most effective when developed collaboratively by those affected by the problem and those with the jurisdiction to bring about change, and when evaluated to ensure they bring about the desired health impact.

Leadership, partnership and education are the three consistent themes in existing guidelines for the development of healthy public policies and national policy documents for effective falls prevention programming for older persons (5, 1, 6, 2, 3, 7, 8). These themes are presented here as the building blocks of healthy public policy necessary for enabling health promotion, strengthening community action and developing personal skills (9).

Leadership

In many countries the route to effective and sustainable falls prevention at national, regional and local levels has been impeded by a lack of strong leadership that is essential to the
advancement of sustained, coordinated and collective policy development. Government agencies responsible for health and social services for older persons are well placed to provide such leadership by establishing a policy-making infrastructure, setting priorities and targets, and overseeing and supporting national efforts to reduce falls and fall-related injuries (8).

Specific leadership roles for the development of policies for falls prevention include the following:

- **Defining the problem:** For policy makers to move forward on the issue of falls prevention they must first understand the size of the problem, who it affects, the social and economic burden, trends over time and projections for the future, what is known about the contributors to the problem and what works to reduce or eliminate those contributors.

- **Identifying relevant stakeholders:** The role of a leader is to engage the right people to partner in the development and dissemination of information that will facilitate positive change – this includes bringing together those affected by the problem and those with the ability to enact solutions.

- **Identifying and securing resources:** Long-term commitments are required for research, integration of evidence into practice and evaluation.

- **Implementing legislation:** Leadership is required to determine which prevention approaches require legislation or regulation and to work across, and within, government departments and non-government agencies to bring about the necessary changes.

- **Explicating barriers and facilitating factors:** A leader must balance falls prevention policies and programming with competing demands for resources, as well as aligning solutions to complimentary policies and programs that are already in place. For meaningful and inclusive policy development, leaders are required who have the ability to put policies in place that reflect the rights of older persons to lead full and active lives as integrated and valued members of society free from the risk of preventable injury.
Strong leadership has been demonstrated in a number of countries that has led to effective falls prevention policies. Examples include those from Canada, the United States and Australia.

In Canada, a turning point in policy development for falls prevention occurred when a lead policy maker in the British Columbia (B.C.) Ministry of Health, Dr. Shaun Peck, set in place a collaborative process for priority setting to reduce falls and fall-related injury rates for the province. The process involved an analysis of regional data on the scope and nature of the problem for each of the five health regions in the province combined with meetings of regional stakeholders to identify priority areas for change. The final product was a comprehensive report of fall-related morbidity and mortality for the province and regions, a review of the literature on fall risk factors and proven prevention strategies, and 31 priority recommendations for policy and prevention (10). The process of involving the stakeholders in the formation of these recommendations was pivotal to the success of this leadership model. Since release of this report, there has been substantial growth in the number of falls prevention programs and a significant reduction in fall-related deaths and hospitalization in B.C. (11). This report provided momentum for the formation of the British Columbia Falls and Injury Prevention Coalition (BCFIPC), the publication of a subsequent report titled: the *Evolution of Seniors’ Falls Prevention in British Columbia* (11) and was also the impetus for a national report on seniors’ falls in Canada (7). These reports, and an overview of the BCFIPC activities, are available on the Internet (12).

In the United States, effective leadership by the National Safety Council, the National Home Safety Council; the National Council on the Aging, and other members of the Falls Free Coalition (using data from the Centers for Disease Control’s National Center for Injury Prevention and Control), as well as leadership from politicians, such as Senator Michael Enzi has resulted in the development and subsequent passing of a bill on falls prevention in the Senate. This bill directs
the Secretary of Health and Human Services to expand and intensify programs with respect to research and related activities concerning falls among older persons (13, and in a conversation with Judy Stevenson, National Center for Injury Prevention and Control, oral communication, October 23, 2006). A similar bill titled, H.R. 5608 The Keeping Seniors Safe from Falls Act of 2006, has been introduced into the House of Representatives by representatives Ralph Hall and Frank Pallone (14). If passed, H.R. 5608 will create a national public education and awareness campaign for older adults and their families, provide for professional education for health care providers, expand research and provide demonstration projects to develop better ways to prevent falls and to improve the treatment and rehabilitation of older persons who fall (15).

Continued strong leadership on this issue is essential as a bill must be passed by both the House and Senate and then signed by the President before it becomes law.

The Australian Leadership Group of the National Falls Round Table, with representation from leaders in falls prevention from each State and the Commonwealth Government, has taken initiative in developing strategic policy direction for falls prevention as outlined in the report titled: National Falls Prevention for Older People Plan: 2004 Onwards (16). The plan is a cohesive and comprehensive response to the problem of falls and injuries among older persons and builds on work well underway in community, acute care and residential settings in most regions of Australia. Many of these programs have also expanded into major, multi-state initiatives (Pam Albany, Manager Injury Prevention Policy Branch, NSW Health Department, email communication, October 23, 2006). The urgent need for expansion of the Australian plan is expressed by the authors of the NSW Management Policy to Reduce Fall Injury Among Older People (2p.ix):

“Health systems often rely on the circulation of best practice guidelines and training of practitioners to respond to client needs. It is assumed that the service delivery system will then adjust to meet the demand. In this case, the onset of the epidemic of fall injury will be too rapid and too costly to rely on the fragmented response of Health Areas and professionals and the wide range of people and organizations that influence risk …there is a
need for a systematic approach to funding, training and research to ensure a cohesive response”.

**Partnership**

A good leader will recognize that the most important allies in developing effective falls prevention policies are those most directly impacted by the issue – older persons at risk of falling and those who care for them. To bring about change, there must also be involvement of those with the ability to implement solutions in all areas that affect fall risk for older persons. A first step in effective partnerships is to gain a mutual understanding of how the problem affects each partner, how each partner will benefit by finding a solution, and the steps needed to put the solution in place. Partnerships and coalitions of a wide variety of organizations—including national, regional, local, nonprofit, voluntary and charitable organizations—are pivotal in supporting these efforts. The key to the success of these efforts is keeping the needs and wishes of the older person in the forefront of all decision making through direct involvement in the planning, implementation and evaluation of prevention efforts.

Potential partners for falls prevention include;

- Individuals and organizations representing older persons at risk of falling, including non-profit foundations and societies for older persons, support groups for those with chronic health problems, caregiver groups, etc.
- Health and social service providers, including nurses, physical and occupational therapists, physicians, pharmacists, nutritionists, social workers, etc.
- Policy makers and legislators with jurisdiction for the health and safety of older persons, at national, regional and local levels of government.
- Emergency service providers (who are often the first on the scene after a serious fall incident), including ambulance attendants, police and fire fighters.
• Researchers from disciplines including epidemiology; behavioural and social sciences; medicine, public and allied health disciplines; as well as falls prevention experts with the skills to translate empirical evidence into practical application.

• Health economists with the ability to determine the economic impact of falls and the cost benefits of different prevention approaches.

• Educators with skills in the appropriate delivery of information for older persons, including those with limited literacy, non-dominant language or representing cultural minorities.

• Those with responsibility for safety in public environments, including providers of public transportation, city planners, architects, building trade workers, building maintenance workers, building managers and those who design and enforce public building codes and standards.

• Private sector businesses that produce and distribute products and services for older people.

Strategies for developing and maintaining partnerships include the formation of falls prevention coalitions and electronic networks. Successful examples of these include the Falls Free Coalition in the United States and the PROFANE Network based in Europe.

The Falls Free Coalition is a collective of representatives of national organizations and state coalitions working to reduce the growing number of falls and fall-related injuries among older adults (17). With support from the Archstone Foundation and Home Safety Council non-profit organizations, members of the Falls Free Coalition first convened in 2004 to write the Falls Free National Action Plan (18). The plan outlines key strategies and action plans for fall prevention to address the following five priority areas: 1) physical mobility; 2) medications management; 3) home safety; 4) environmental safety in the community; and 5) cross-cutting issues, such as
advocacy, policy, links to health care systems and integration of interdisciplinary activities. The Falls Free web site and newsletter is found at (19).

The Prevention of Falls Network Europe (ProFaNE) can be accessed on the Internet (20) and is a European Community-funded Thematic Network to promote effective practice in falls prevention among older persons. The network has over 1100 website members from over 30 countries, an active discussion board, and nearly 900 resources available on the website to download. ProFaNE disseminates good practice by making all its resources publicly available on the ProFaNE website, including copies of presentations given by ProFaNE members, links to published papers, reports and the Falls Efficacy Scale-International (FES-I) measure of fear of falling. One example of their active networking is the translation of the FES-I into many different languages and the data sharing that has ensued. ProFaNE provides contacts for organizations across Europe that have an interest in falls prevention and links with other related national and international networks. Information on the pathway or journey of a “faller” through Health Care Systems across Europe is freely available to anyone who registers on the website. Publications by ProFaNE members include a review on falls prevention for the WHO Health Evidence Network (21) (Dawn Skelton, ProFaNE Scientific Co-ordinator, email communication, October 20, 2006).

Education

Along with good leadership and partnerships, education is the third key strategy for building capacity for falls prevention policy development and implementation. To be effective, education must be part of a larger strategy for falls prevention that reflects current evidence, adult learning principles and integration of learning to practice. Learning takes time and occurs through a series of “progressive and mutually reinforcing education and training activities” (22). Educational needs for the prevention of falls include understanding who is at risk and why, what
is known to reduce the risk and what can be done to overcome barriers to risk reduction. The following is an outline of key learning needs for effective falls prevention programming for individuals, communities, professionals and policy-makers.

- **Learning needs for individuals at risk:**
  - Understanding that falls are not an inevitable outcome of aging and that falls can be prevented,
  - Recognizing their fall risks and understanding how to increase their ability to reduce their risk, and
  - Identifying the supports and services necessary to bring about change.

- **Learning needs for communities:**
  - Knowing how to facilitate an effective exchange of information between those at risk for falling and those with solutions for reducing risk that respects cultural and geographic diversity,
  - Knowing where to find information on proven prevention strategies at the individual and community level, and
  - Understanding how to influence policies that impede the ability to reduce identified individual and community fall risks.

- **Learning needs for professionals:**
  - Knowing where to find credible sources of current, proven best practices for the assessment and management of falls among older persons,
  - Knowing how to integrate evidence into practice in ways that are cost-effective, feasible, sustainable and reflect the needs of the clients being served,
  - Knowing how to evaluate the effectiveness of their practice related to falls prevention, and
  - Understanding how to influence policies within organizational structures to support such actions.
• Learning needs for policy-makers:
  o understanding how to monitor the scope and nature of the problem of falls in their jurisdiction,
  o knowing how to translate evidence for prevention into healthy public policies that reflect the needs and preferences of the target population across the lifespan,
  o understanding how to collaborate effectively with multiple jurisdictions, sectors and community members to inform and created credible and inclusive public policies to reduce falls, and
  o understanding how to apply optimal evaluation methods for determining the impact of policies designed to reduce falls among older persons.

Methods for delivering such learning opportunities include national, regional or local education campaigns to provide falls prevention information to older persons, family members, caregivers, service providers, health care professionals, and others who provide health and social services to older persons. Such campaigns could be implemented through radio, television, internet or print media, or through continuing education programs, peer-reviewed publications, seminars and conferences. Another approach is to develop national education and training guidelines for health care professionals and service providers that integrate falls prevention into routine health and social service systems.

An example an effective media campaign is the multi-faceted state-wide social marketing strategy developed by the Australian Department of Health to raise awareness about falls among older persons (23). The aim of this strategy is to enhance existing Stay On Your Feet WA™ program activities by shifting attitudes and beliefs to effect positive behavioural change for the prevention of falls.
An example of a national policy for the support of education as a strategy for falls prevention is the development of the Canadian Falls Prevention Curriculum© (24), funded by the Population Health Fund of the Public Health Agency of Canada. This curriculum, to be published in the two lead languages in Canada (French and English), is designed to provide community leaders and those who provide health and social services to older persons with the skills needed to design, implement and evaluate evidence-based falls prevention programs. To ensure relevance to the target audience the process for the development, testing and dissemination of the curriculum actively involves partners representing older persons, policy makers, educators, researchers and health and social service providers. Included in this curriculum is a critical review of existing falls prevention curricula for health care providers and community falls prevention programmers that reflect current evidence on interventions for falls reduction among older persons. See Table 1, Appendix A for a list of the most highly rated curricula.

Research

There has been a substantial increase in the past decade in research on the prevention of falls among older persons. Considerable evidence now exists that most falls among older persons are associated with identifiable and modifiable risk factors and that targeted prevention efforts are shown to be effective and fiscally responsible (25).

The following section outlines a summary of key findings for falls prevention taken from systematic reviews and meta-analyses (26, 27, 28, 29, 30, 31, 32), other reviews (25, 21) and individual studies. In addition, a discussion on considerations for effective integration of evidence into practice is provided with recommendations for future research in this field. For more in-depth presentations of systematic review findings, see reviews by Gillespie et al (28),
Prevention

Most falls and resulting injuries among older persons are shown to result from a combination of age and disease-related conditions and the individual’s interaction with their environment (25). It is also known that risk increases exponentially for those with multiple risk factors (34).

There is good evidence to show that some interventions are more effective than others. This information is typically reported as strength of evidence graded from A to D based the quality of research methodology and the findings of expert review panels who balance evidence with knowledge of clinical relevance. The following is a description of the difference between the levels of evidence based on the Cochrane grading system:

A. at least one randomized controlled trial (RCT) or a meta-analysis of RCTs directly concerned with reduction of falls.

B. at least one controlled study without randomization or from at least one quasi-experimental study or extrapolated recommendation from (A) when fall risk, rather than actual number of falls, was assessed

C. evidence from non-experimental studies or extrapolated recommendation from (A) or (B)

D. evidence from expert panels, or clinical opinion or extrapolated recommendations from (A), (B) or (C).

The following describes interventions shown to have strong evidence presented by community, residential and acute care settings.
Community

i. Multifactorial approaches:

Grade A evidence exists to show that health and environment risk-factor assessment, with interventions based on assessment results, is highly effective in reducing falls among community-dwelling older persons who are cognitively intact (26,28). Components of successful multifactorial approaches include environmental risk assessment and modification; balance and gait training with appropriate use of assistive devices; medication review and modification; managing visual concerns; and addressing orthostatic hypotension and other cardiovascular problems.

Exercise is shown to be an important component of a multifactorial intervention, particularly when applied consistently for ten weeks or longer (21). However, little is known about the cost effectiveness of exercise programs for older persons and more research is needed to determine the optimal type, duration, frequency and intensity of exercise programs (35).

Within a multifactorial approach, the components of successful health interventions focus on post-fall clinical assessment followed by treatment involving a multidisciplinary team approach. The following medical conditions are most often reported as target areas for fall reduction: cardiac dysrhythmias and orthostatic hypotension; discontinuing medications that contribute to postural hypotension or sedation and reducing the number of medications; addressing gait and balance problems with appropriate assistive devices; rehabilitation for weakness and mobility problems; and treatment of correctable vision and hearing deficits (25).

Environmental screening and modification programs are shown to be most effective when they involve a multidisciplinary team and are targeted to those with a history of falling or known risk factors (28). The precise components of successful home modification are not clearly
understood. Most programs target the removal hazards such as loose rugs, clutter, electrical
cords, unstable furniture and installation of bathroom grab bars, raised toilet seats, handrails on
both sides of stairways and the use of personal alarm systems to call for help if needed (25).

Evidence also exists to show that education and self-management programs when used on their
own without measures to implement change are not effective in the community setting (21). In
addition, there is a lack of evidence to show that multifactorial interventions are effective for
older persons with cognitive impairments (28).

**ii. Single factor interventions:**

While less effective than multifactorial approaches, there are a number of single factor
interventions shown to have a strong effect in reducing falls among community-dwelling older
persons. Single interventions that are most strongly recommended (grade A) include exercise,
home hazard assessment and modification, withdrawal of psychotropic medications and cardiac
pacing for fallers with carotid sinus hypersensitivity (26, 28).

As a single intervention strategy, the exercise approach shown to be most effective is
individually tailored muscle strength and balance retraining prescribed by a trained health
professional. Group exercise programs are shown to be less effective than individually
prescribed exercises, with the exception of a group program using the Tai Chi intervention – a
form of Chinese martial arts (36).

Home hazard assessment and modification is shown to be most effective as a single strategy
when professionally prescribed for older persons with a history of falling (28). The precise
nature of successful modifications is poorly understood and it is thought that other interventions
likely influenced the findings as fall reductions are observed both inside and outside of the home.

Strategies with unknown effectiveness in single intervention approaches among older persons in the community include cognitive and behavioural interventions, individual lower limb strength training, home hazard modification for older persons without a history of falling, nutritional supplementation, Vitamin D supplementation (with or without calcium), hormone replacement therapy and correction of visual deficiency (28).

There is no clear evidence to support the use of education programs as an effective single factor intervention but education is shown to be an important component of multifactorial interventions (26, 31).

Residential:

Two studies (37, 38) with grade A evidence are shown to support the effectiveness of a multifactorial, multidisciplinary intervention in reducing falls among residents of long-term care facilities. Interventions in these studies included staff training and guidance, changes in medication, resident education, environmental modifications, supply and repair of aids, exercise and use of hip protectors.

The only single interventions shown to be effective in residential settings with grade A evidence is the use of vitamin D and calcium supplements. Those with grade B evidence include gait training and advice on appropriate use of assistive devices; review and modification of medications, particularly psychotropics; nutritional review and supplementation; staff education programs; exercise programs; environmental modification; and post-fall problem solving.

1 Residential setting: also known as nursing homes, care homes or long-term care facilities
sessions (21). The use of hip protectors as a single strategy to reduce fall-related hip fractures in residential settings is found to have grade C evidence (21, 39).

There is no evidence to support the effectiveness of interventions to reduce falls among residents with cognitive impairments (39).

**Acute care**: No evidence exists to support the effectiveness of multifactorial interventions in acute care settings (28). The use of physical or pharmaceutical restraints commonly used with the intention of reducing falls is shown not to be effective. Conversely, there is grade B evidence to support an increased risk of injury from a fall with the use of restraints (21). Alternatives to restraints (lower bed, mats on floor, training on exercise and safe transfers) have grade B evidence for their effectiveness (21). Other interventions that have been tested but lack strong supporting evidence include hospital discharge risk assessment and planning, exercise programs, environmental modifications, use of bed alarms and the use of identification bracelets (29, 30).

The lack of evidence in acute care settings is influenced by poor research methodology, small sample sizes and the complexity of co-morbid conditions and concomitant medical treatments (27, 29, 30). More studies are needed in this area with improved research methods.

**Risk factor assessment**

Risk factor assessment is an important component of multifactorial, multidisciplinary falls interventions, yet few studies have demonstrated consistent predictive validity of such tools over repeated testing (40, 41, 42, 43). While the authors of the RAND report on evidence-based recommendations for falls prevention conclude that risk factor identification may be self...
administered or administered by a professional (32), the accuracy of such assessment is dependent on the proven validity and reliability of the tool among the intended population. It is well known that fall risk profiles differ considerably among well, active seniors who live in the community; those who are frail and need support to live at home in the community; those who require long-term care; and those who are hospitalized for acute health problems (34, 44, 45, 46, 47). A recent review of fall risk assessment tools shows that there are only a few tools with moderate to good predictive validity and reliability that have been tested among each of these populations – many target only subpopulations within these settings and most lack repeat testing (43).

Future research needs

As demonstrated in the above review, there are a number of gaps and omissions in the existing body of evidence on falls prevention. Areas identified as research priorities in falls prevention include (48, 28, 49, 31):

- Practice-based studies conducted in 'real-world' settings, where evidence generated accurately reflects the context and limitations of the setting.
- Studies to determine if falls prevention interventions are also effective in reducing fall-related injuries.
- Studies focusing on hip protectors, special floors and other devices that minimize the impact of injuries among older adults who fall.
- More randomized controlled trials on intervention effectiveness in residential and acute care settings.
- Studies to uncover the contribution of culture, race/ethnicity, gender and socioeconomic status as contributors to falls and related injury outcomes.
- Studies to identify external environmental, community and public variables that are related to fall risk factors and remediation among older persons.
• Studies on the effectiveness of interventions among older persons with cognitive impairment and dementia.

• Studies in all settings to include cost/benefit analysis in evaluation of falls interventions.

• Studies on fall-related epidemiology, risk and prevention in less developed countries.

Research needs for less developed countries include improving surveillance systems for determining the scope of the problem of falls among older persons. Of the few less developed countries that submit data to the World Health Organization on injury, falls are shown as the leading cause of injury-related mortality for older persons (50). Existing data also show that falls are a major cause of hospitalization from injury in less developed countries and rank equally with vehicle injuries in some countries (50). In addition, research is needed on the unique contributors to falls among older people in less developed countries, including the influence of diet, hazardous environments, the lack of accessible safety equipment and transportation, and the role of inadequate health services of the fall risk of older persons. Injury outcome among older persons in less developed versus more developed countries also needs to be explored, particularly given that hip fractures are being described as an “orthopedic epidemic” in less developed countries [Baker et al; 1992: cited in (50)].

While there has been considerable growth in the number of studies there is still much to be learned about effective and affordable falls prevention interventions. Research evidence alone is not a solution. Consideration must also be given to the likelihood of the success of proven interventions outside of the research context.

**Practice**
Sustainable falls prevention programming depends on the successful application of policy and research into practical implementation at the community and institutional level (51). For effective falls prevention, older persons at risk need access to programs offered in practice settings by those with the knowledge and resources to tailor interventions to individual risk profiles (25). Key practice considerations for sustaining such programs include:

- the translation of research evidence into practice, and
- financial and human resources for falls prevention service delivery and evaluation

**Translation of research evidence into practice:**

Authors of the RAND review of evidence for falls prevention among older persons noted that all reviewed interventions were from studies funded by research grants or demonstration projects and none “were continued as regular programs” (32).  

Sustainability in falls prevention will only be achieved when evidence is integrated into practice in community and institutional settings through a process of evidence translation, defined as, “an extended process of how research knowledge that is directly or indirectly relevant to health behavior eventually serves the public” (52).

On of the barriers to effective translation of evidence exists in the traditional research process based on the following five stages that are traditionally applied to most research (52):

1. Basic research to determine the nature of the problem and contributing factors.
2. Methods development to determine technology, equipment or research designs needed to study the problem.
3. Efficacy trials to evaluate the desired change under ideal or laboratory conditions.
4. Effectiveness trials to evaluate the desired change under real life or usual conditions.
5. Dissemination research to examine and evaluate the barriers and facilitating factors to widespread use of a proven intervention.

This staged approach is driven by scientific rigor, with little consideration of the needs of end users until the final stage of dissemination. Examples of the application of this process in falls prevention research where the end users are not considered include studies that test the effectiveness of group exercise programs for community-dwelling seniors without consideration of cost or accessibility to such programs after the study ends; or the testing of hip protectors to reduce the risk of hip fractures from a fall without consideration to acceptability, durability, comfort and ease of use.

While it is accepted that research is an iterative process, it is also clear that the consideration for practical application must be addressed at each step. This can be accomplished through partnerships between researchers, practitioners, policy makers and those directly affected by the problem, with the goal of gaining a better understanding of each other’s context and needs.

For researchers it is important to understand that practitioners have knowledge of the organizational culture and of the needs of those affected by the problem (52). Practitioners are also well placed to link the application of evidence to organizational policies and to identify supports or gaps that need to be addressed before successful adoption is possible. Translation is also facilitated by collaboration across disciplines and sectors and with those directly affected by the issue. This is particularly true for issues as complex as falls among older persons, where the risk factors encompass biological, behavioural, socioeconomic and environmental contributors.
A good example of collaboration for the integration of evidence to practice is found in the United Kingdom (U.K.). Through leadership provided by the National Director for Older People, Professor Ian Phillip, the first comprehensive framework was implemented in 2001 for health and social services for older people. The framework, titled *Older People: National Service Framework* (5), includes the prevention of falls as one of eight overlapping and complimentary standards for directing the quality of a comprehensive approach to person-centered health promotion. The framework is the result of extensive consultation with older people, their caregivers and leading professionals in the care of older persons. The framework sets out a program of action and reform to address the problem of falls and directs action for improvements to the quality of services to reduce fall risk among older persons. The framework includes a process for clear accountability on the effective integration falls prevention into national standards for health service delivery throughout the U.K. The results of this evaluation are provided on the Internet at (53).

An effective tool for enacting the translation of evidence into practice is the development of clinical practice guidelines. Guidelines inform decision making and set priorities through systematically developed statements based on an authoritative examination of current evidence. They integrate evidence with clinical judgment and the experience of health practitioners (54). A recent review of existing falls prevention guidelines found 21 that were consistent with this definition, ten of which offered a complete and comprehensive guide for falls prevention clinical decision-making, with recommendations based on a review of current evidence (55). Highlights from this review are presented in Table 2, Appendix B.

**Financial and human resources:**

Adequate financial and human resources are essential to the sustainability of falls prevention programming. As authors of the RAND report note that “Two key issues are involved in
sustaining falls prevention programs: obtaining and maintaining sufficient funding and availability of programs” (32p26).

There is a consensus among those who work in the field of falls prevention that the time has come to implement what is already well known – the most effective way to address the economic burden of falls is to focus on prevention rather than the treatment of resulting injuries (8, 32, 56). To accomplish this, resources need to be allocated to those who provide prevention and intervention services (8). This can be accomplished through provision of resources for expanding and maintaining services by the following health care professionals:

- To clinicians to conduct health-related fall risk assessments and risk factor reduction for high risk individuals
- To pharmacists for review of medications taken by older persons, with counseling on fall prevention
- To physiotherapists to conduct balance and gait training for older persons to reduce their fall risk
- To occupational therapists for home assessments and modification for older persons who have sustained falls or fall-related injuries

The need for sustainable funding for falls prevention was the conclusion of a review panel convened at the Centres for Disease Control in Atlanta, Georgia to provide recommendations for the future falls research agenda for the National Center for Injury Prevention and Control (NIPC). As noted in the in the NIPC final report on the falls prevention research portfolio:

“If the nation is going to reach its falls prevention goals, what is needed now is funding to refine these strategies for populations with differing characteristics, funding to promote these strategies, research on the dissemination of these strategies, and funding for NIPC to lead the way in implementing these strategies at the federal, state, and local levels.” (49p47).
Funding is a policy issue that will only be supported if the programs are shown to be effective, feasible and cost-effective. A review of the cost effectiveness of falls prevention interventions shows that multifactorial approaches and exercise programs are cost effective (34). However, there is a lack of consistency of indicators across studies and further investigation is needed to standardize measures of intervention costs that include quality of life indicators, as well as program delivery costs and costs for treating fall-related injuries (34).

Conclusions

Considerable advances have occurred over the past decade in the areas of policy, research and practice for the prevention of falls among older persons. Examples exist in a number of countries that demonstrate strong leadership and collaboration for the development of healthy public policies to support falls prevention. A substantial body of knowledge exists for proven interventions and programs, and guidelines are under development for the integration of this knowledge into practice.

However, there are also many challenges to overcome. Policy development is sporadic, with few examples of entrenched legislation to support stained efforts. There is a lack of evidence to support the impact of policies and ‘real world’ practice on reducing falls and related injuries. Significant gaps exist in research on effective prevention in institutional settings and few studies exist that demonstrate the successful translation of evidence to practice. Few studies exist for the prevention of falls in less developed countries and there is little attention given to challenges faced in poorer countries to address the prevention of falls among older persons living in poverty.
The effect of a fall on an older person can be a devastating event, resulting in chronic pain, loss of independence and a reduced quality of life. The cumulative effect of falls and resulting injuries among the growing number of older persons in most countries has the potential to reach epidemic proportions that consume a disproportionate amount of health care resources. Immediate action is needed to implement sound public policies through a sustained commitment to financial and human resources to address this important issue.
References


## Table 1: Falls Prevention Curricula (24)

<table>
<thead>
<tr>
<th>Curriculum Title</th>
<th>General Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Falls risk: A resource for rural health practice</strong> (67). (Butt, 2004)</td>
<td>Resource for nurses and other health care professionals who provide services to older adults in rural and remote Australia. Linked to the “Quick Screen” clinical assessment tool by S. Lord and A. Tiedemann. Focus on early identification and prevention of fall risk within clinical practice. 92 pages.</td>
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<tr>
<td>National center for patient safety 2004 falls toolkit (70). (VA National Center for Patient Safety, 2004).</td>
<td>For staff of facilities at one of three stages: 1) starting new falls program 2) in beginning stages of falls program 3) comprehensive falls program in place. American. 121 pages.</td>
</tr>
<tr>
<td>Falls and bone health: Interactive training program (72). (CDRom) (Overstall, 2002).</td>
<td>An interactive CD-Rom containing approximately 3 hours of tutorial study and printable material covering approximately 4 hours of reading. This course is at a post-secondary training level and suitable for physicians, nurses and occupational therapists. From England.</td>
</tr>
<tr>
<td>General practice nurse falls prevention (73). (CDRom) (Royal College of Nursing Australia, 2005).</td>
<td>A 60-minute, self-paced CD course for nurses covering assessment, management and monitoring of clients who present at risk of falls or who have had a fall. 40 pages.</td>
</tr>
<tr>
<td>Strategies and actions for independent living - falls prevention for clients of home support services (74). (Scott, Swan, Bawa et al., 2006).</td>
<td>For home health professionals and community health workers. The program promotes a multifactorial, collaborative approach to falls risk assessment and prevention for clients of publicly-funded home support services. Two manuals of 150 pages each. Canadian.</td>
</tr>
<tr>
<td>Essential Falls Management Series - Managing falls in assisted living (75). (CDRom) (Tideiksaar, 2006).</td>
<td>This CDRom prepares staff members in assisted living facilities to better understand and manage residents’ risks for falling. Tools are included. American.</td>
</tr>
</tbody>
</table>
### Appendix B

#### Table 2: Falls Prevention Clinical Guidelines

<table>
<thead>
<tr>
<th>Guideline Title and Source</th>
<th>General Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Falls and falls risk: Clinical practice guideline</strong> (58). (American Medical Directors Association, 2003)</td>
<td>Expert consensus on quality of care specific to residents of long-term care facilities. Core steps present in an algorithm to guide staff decision-making for fall risk assessment and prevention. Use of levels of evidence not explicit. 15 pages.</td>
</tr>
<tr>
<td><strong>Preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals and residential aged care facilities</strong> (59). (Australian Council for Safety and Quality in Health Care, 2005).</td>
<td>Applicable to long-term care and acute settings. A broad approach, from the strategic level to the specifics of applying interventions at the point of care. Based on levels of evidence. 239 pages.</td>
</tr>
<tr>
<td><strong>Guidelines for the prevention of falls in people over 65</strong> (60). (Feder, Cryer, Donovan et al., 2000).</td>
<td>Compilation results from systematic reviews and updates of literature from all care settings up to 1998. 5 pages.</td>
</tr>
<tr>
<td><strong>Fall prevention for older adults: Evidence-based protocol</strong> (61). (Lyons, 2004).</td>
<td>Applicable to community, long-term and acute care settings. Designed for practical application, with tools and tests available in the appendices. Designed using levels of evidence. 60 pages.</td>
</tr>
<tr>
<td><strong>Evidence-based guidelines for the secondary prevention of falls in older adults</strong> (62). (Moreland, Richardson, Chan et al., 2003).</td>
<td>Analysis of limitations of other falls guidelines with aim of filling identified gaps through a search of levels of evidence and summary. 23 pages.</td>
</tr>
<tr>
<td><strong>Clinical practice guideline for the assessment and prevention of falls in older people</strong> (33). (National Institute for Health and Clinical Excellence, 2004).</td>
<td>In-depth review of evidence on fall risk, prevention, assessment and clinical guidelines, profiling community and long-term care settings. Based on levels of evidence. 240 pages (approx.).</td>
</tr>
<tr>
<td><strong>Prevention of falls and fall injuries in the older adult</strong> (63). (Registered Nurses’ Association of Ontario, 2005).</td>
<td>Designed for use by nurses working in long-term and acute care settings. Best practice guidelines to enhance skills and abilities of nurses for risk assessment and prevention among older persons. Use of levels of evidence not explicit. 56 pages</td>
</tr>
</tbody>
</table>