Revised March 2005

Nursing Best Practice Guideline
Shaping the future of Nursing

Prevention of Falls and Fall Injuries in the Older Adult

RNAO
Registered Nurses' Association of Ontario
L'Association des infirmières et infirmiers autorisés de l'Ontario
NURSING BEST PRACTICE GUIDELINES PROGRAM

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NURSING BEST PRACTICE GUIDELINES PROGRAM

Greetings from Doris Grinspun
Executive Director
Registered Nurses' Association of Ontario

It is with great excitement that the Registered Nurses' Association of Ontario disseminates this **revised** nursing best practice guideline to you. Evidence-based practice supports the excellence in service that nurses are committed to deliver in our day-to-day practice. The RNAO is committed to ensuring that the evidence supporting guideline recommendations is the best available, and this guideline has been recently reviewed and revised to reflect the current state of knowledge.

We offer our endless thanks to the many institutions and individuals that are making RNAO's vision for Nursing Best Practice Guidelines (NBPG) a reality. The Government of Ontario recognized RNAO's ability to lead this program and is providing multi-year funding. Tazim Virani – NBPG program director – with her fearless determination and skills, is moving the program forward faster and stronger than ever imagined. The nursing community, with its commitment and passion for excellence in nursing care, is providing the knowledge and countless hours essential to the creation, evaluation and revision of each guideline. Employers have responded enthusiastically by getting involved in nominating best practice champions, implementing and evaluating the NBPG and working towards an evidence-based practice culture.

Now comes the true test in this phenomenal journey: will nurses utilize the guidelines in their day-to-day practice?

Successful uptake of these NBPG requires a concerted effort of four groups: nurses themselves, other healthcare colleagues, nurse educators in academic and practice settings, and employers. After lodging these guidelines into their minds and hearts, knowledgeable and skillful nurses and nursing students need healthy and supportive work environments to help bring these guidelines to life.

We ask that you share this NBPG, and others, with members of the interdisciplinary team. There is much to learn from one another. Together, we can ensure that Ontarians receive the best possible care every time they come in contact with us. Let's make them the real winners of this important effort!

RNAO will continue to work hard at developing, evaluating and ensuring current evidence for all future guidelines. We wish you the best for a successful implementation!

Doris Grinspun, RN, MSN, PhD(cand), OOnt

Executive Director
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Prevention of Falls and Fall Injuries in the Older Adult

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Lori Murphy, BHSc, OT, *for her work as interrater during the critical review of the literature.*

Declarations of interest and confidentiality were requested from all members of the guideline revision panel. Further details are available from the Registered Nurses' Association of Ontario.

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Principal Investigators:	Dr. Nancy Edwards, Dr. Barbara Davies – University of Ottawa
Evaluation Team Co-Investigators:	Dr. Maureen Dobbins, Dr. Jenny Ploeg, Dr. Jennifer Skelly – McMaster University Dr. Patricia Griffin – University of Ottawa

RNAO also wishes to acknowledge Valleyview Home for the Aged in St. Thomas, Ontario, for its role in the pilot testing of the guideline during its initial development.

Prevention of Falls and Fall Injuries in the Older Adult

Disclaimer

These best practice guidelines are related only to nursing practice and not intended to take into account fiscal efficiencies. These guidelines are not binding for nurses and their use should be flexible to accommodate client/family wishes and local circumstances. They neither constitute a liability nor discharge from liability. While every effort has been made to ensure the accuracy of the contents at the time of publication, neither the authors nor RNAO give any guarantee as to the accuracy of the information contained in them nor accept any liability, with respect to loss, damage, injury or expense arising from any such errors or omission in the contents of this work. Any reference throughout the document to specific pharmaceutical products as examples does not imply endorsement of any of these products.

How to Use this Document

This nursing best practice guideline is a comprehensive document providing resources necessary for the support of evidence-based nursing practice. The document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client. Guidelines should not be applied in a "cookbook" fashion but used as a tool to assist in decision making for individualized client care, as well as ensuring that appropriate structures and supports are in place to provide the best possible care.

Nurses, other health care professionals and administrators who are leading and facilitating practice changes will find this document valuable for the development of policies, procedures, protocols, educational programs, assessment and documentation tools, etc. It is recommended that the nursing best practice guidelines be used as a resource tool. It is neither necessary nor practical to have every nurse have a copy of the entire guideline. Nurses providing direct client care will benefit from reviewing the recommendations, the evidence in support of the recommendations and the process that was used to develop the guidelines. However, it is highly recommended that practice settings/environments adapt these guidelines in formats that would be user-friendly for daily use. This guideline has some suggested formats for such local adaptation and tailoring.

Organizations wishing to use the guideline may decide to do so in a number of ways:

- Assess current nursing and health care practices using the recommendations in the guideline.
- Identify recommendations that will address identified needs or gaps in services.
- Systematically develop a plan to implement the recommendations using associated tools and resources.

RNAO is interested in hearing how you have implemented this guideline. Please contact us to share your story. Implementation resources will be made available through the RNAO website to assist individuals and organizations to implement best practice guidelines.

Table of Contents

Summary of Recommendations

General Principles:

1. The client's perspective, individual desires and needs are central to the application of the guideline.
2. The over-arching principle that guides the intervention choices is the principle of maintaining the highest quality of life possible while striving for a safe environment and practices. Risk taking, autonomy, and self-determination are supported, respected, and considered in the plan of interventions.
3. Individuals, their significant other(s) and the care team engage in assessment and interventions through a collaborative process.

RECOMMENDATION		*LEVEL OF EVIDENCE	+GRADE OF RECOMMENDATION
Practice Recommendations			
Assessment	1.0 Assess fall risk on admission. 1.1 Assess fall risk after a fall.	Ib Ib	B B
Intervention *Tai Chi*	2.0 Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months and for those clients with no history of a fall fracture. There is insufficient evidence to recommend Tai Chi to prevent falls for clients with LOS less than four months.	Ib	B
Exercise	2.1 Nurses can use strength training as a component of multi-factorial fall interventions; however, there is insufficient evidence to recommend it as a stand-alone intervention.	Ib	I
Multi-factorial	2.2 Nurses, as part of the multidisciplinary team, implement multi-factorial fall prevention interventions to prevent future falls.	Ia	B
Medications	2.3 Nurses, in consultation with the health care team, conduct periodic medication reviews to prevent falls among the elderly in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. There is fair evidence that medication review be conducted periodically throughout the institutional stay.	IIb	B
Hip Protectors	2.4 Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use of hip protectors among the elderly in health care settings.	Ib	B

* For a discussion of Levels of Evidence see p. 11.

\+ For a discussion of Grades of Recommendation see p. 12.

	RECOMMENDATION	*LEVEL OF EVIDENCE	+GRADE OF RECOMMENDATION
Vitamin D	**2.5** Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style, and treatment choice for the prevention of osteoporosis is relevant in relation to reducing the risk of fracture.	IV	
Client Education	**2.6** All clients who have been assessed as high risk for falling receive education regarding their risk of falling.	IV	
Environment	**3.0** Nurses include environmental modifications as a component of fall prevention strategies.	Ib	
Education Recommendations			
Nursing Education	**4.0** Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to: ■ Promoting safe mobility; ■ Risk assessment; ■ Multidisciplinary strategies; ■ Risk management including post-fall follow-up; and ■ Alternatives to restraints and/or other restricted devices.	IV	
Organization & Policy Recommendations			
Least Restraint	**5.0** Nurses should not use side rails for the prevention of falls or recurrent falls for clients receiving care in health care facilities; however, other client factors may influence decision-making around the use of side rails.	III	I
	6.0 Organizations establish a corporate policy for least restraint that includes components of physical and chemical restraints.	IV	
Organizational Support	**7.0** Organizations create an environment that supports interventions for fall prevention that includes: ■ Fall prevention programs; ■ Staff education; ■ Clinical consultation for risk assessment and intervention; ■ Involvement of multidisciplinary teams in case management; and ■ Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms.	IV	

RECOMMENDATION		*LEVEL OF EVIDENCE	+GRADE OF RECOMMENDATION
Medication Review	**8.0** Implement processes to effectively manage polypharmacy and psychotropic medications including regular medication reviews and exploration of alternatives to psychotropic medication for sedation.	IV	
RNAO *Toolkit*	**9.0** Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes: ■ An assessment of organizational readiness and barriers to education. ■ Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process. ■ Dedication of a qualified individual to provide the support needed for the education and implementation process. ■ Ongoing opportunities for discussion and education to reinforce the importance of best practices. ■ Opportunities for reflection on personal and organizational experience in implementing guidelines. In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives and consensus. The *Toolkit* is recommended for guiding the implementation of the RNAO guideline *Prevention of Falls and Fall Injuries in the Older Adult*.	IV	

Interpretation of Evidence

Levels of Evidence

This RNAO guideline is based on scientific evidence related to prevention of falls and fall-related injuries among the elderly in health care settings. To this end, a literature review of relevant studies was conducted. Where available, studies characterized by good methodologic quality and rigorous scientific design such as systematic reviews, meta-analyses and randomized controlled trials (RCT) were identified as the goal for inclusion within the guideline. Where high quality studies were unlikely to be found due to the nature of the intervention of interest such as risk screening, other levels of evidence were considered including cohort and case-control studies. The following evidence rating taxonomy provides the definitions of the levels of evidence and the rating system used in this document. All studies included in the literature review in support of this guideline were assigned a level of evidence in accordance with the classification system outlined in Table 1.

Table 1: Levels of Evidence

Ia	Evidence obtained from meta-analysis or systematic review of randomized controlled trials.
Ib	Evidence obtained from at least one randomized controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomization.
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study.
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

Grades of Recommendation

In addition to levels of evidence, recommendations generated as a result of the literature review were also assigned a grade. The grade associated with each recommendation reflects the strength of the evidence supporting it as well as the direction of the effect. For example, if a large body of literature of good methodological quality and design suggests the effectiveness of a given therapeutic intervention, it is likely the resultant recommendation would receive an "A" grade, meaning there is good evidence to include the intervention. The grade of recommendation classification system has been adopted from the Canadian Task Force on Preventive Health Care (CTFPHC, 1997). See Table 2.

Table 2: Grades of Recommendation

A	There is **good** evidence to recommend the clinical preventive action.
B	There is **fair** evidence to recommend the clinical preventive action.
C	The existing evidence is **conflicting** and does not allow making a recommendation for or against use of the clinical preventive action; however other factors may influence decision-making.
D	There is **fair** evidence to recommend against the clinical preventive action.
E	There is **good** evidence to recommend against the clinical preventive action.
I	There is **insufficient** evidence (in quantity and/or quality) to make a recommendation, however other factors may influence decision-making.

Reference: Canadian Task Force on Preventative Health Care (CTFPHC). (1997). Quick tables by strength of evidence. Available: http://www.ctfphc.org

Responsibility for Development

The Registered Nurses' Association of Ontario (RNAO), with funding from the Government of Ontario has embarked on a multi-year project of nursing best practice guideline development, pilot implementation, evaluation and dissemination. *Prevention of Falls and Fall Injuries in the Older Adult* is one of the areas of focus. This guideline was developed and subsequently revised by a panel of nurses and other experts convened by the RNAO and conducting its work independent of any bias or influence from the Government of Ontario.

Purpose & Scope

Best practice guidelines (BPG) are systematically developed statements to assist practitioners' and clients' decisions about appropriate health care (Field & Lohr, 1990).

The purpose of this guideline is to increase all nurses' confidence, knowledge, skills and abilities in the identification of adults within health care facilities at risk of falling and to define interventions for the prevention of falling. It does not include interventions for prevention of falls and fall injuries in older adults living in community settings. The guideline has relevance to areas of clinical practice including acute care and long-term care, and will assist nurses to apply the best available research evidence to clinical decisions, and to promote the responsible use of health care resources. Specifically, *Prevention of Falls and Fall Injuries in the Older Adult* will assist nurses to:

- Identify risk factors for falls;
- Decrease the incidence of falls; and
- Decrease the incidence of injurious falls.

The guideline focuses on: *Practice Recommendations* for assisting practitioner and client decisions; *Education Recommendations* for supporting the skills required for nurses; and *Organization and Policy Recommendations* addressing the importance of a supportive practice environment as an enabling factor for providing high quality nursing care which includes ongoing evaluation of guideline implementation.

This nursing best practice guideline contains recommendations for Registered Nurses (RNs) and Registered Practical Nurses (RPNs). It is acknowledged that effective client care depends on a coordinated multidisciplinary approach incorporating ongoing communication between health professionals and patients/clients, ever mindful of the personal preferences and unique needs of each individual client. The recommendations made are not binding for nurses and should accommodate client/family wishes and local circumstances. It is the intention of this guideline to identify best nursing practices in the area of falls and prevention of falls. It is acknowledged that the individual competency of nurses varies between nurses and across categories of nursing professionals (RPNs and RNs), and is based on the knowledge, skills, attitudes and judgment enhanced over time by experience and education.

Original Guideline Development Process – 2000

A panel of nurses with expertise in falls prevention, education, and research, representing various health care and academic settings was convened under the auspices of the RNAO. The first task of the group was to review existing clinical practice guidelines in order to build on current understanding of falls prevention in the older adult, and to reach consensus on the scope of the guideline.

Three published guidelines related to prevention of falls and fall injuries in the older adult were identified through a systematic literature search. These guidelines were reviewed according to a set of inclusion criteria, which resulted in the elimination of one guideline. The inclusion criteria were:

- Guideline was in English;
- Guideline was dated no earlier than 1996;
- Guideline was strictly about the topic area;
- Guideline was evidence-based; and
- Guideline was available and accessible for retrieval.

Two guidelines met these criteria, and were evaluated using the *Appraisal Instrument for Canadian Clinical Practice Guidelines,* an adapted tool from Cluzeau, Littlejohns, Grimshaw, Feder & Moran (1997). From this appraisal process, the following two documents were identified as relevant guidelines appropriate for use in the development of the original recommendations of the guideline:

- American Medical Directors Association (AMDA). (1998). *Falls and fall risk: Clinical practice guidelines.* Author.
- Ledford, L. (1996). *Prevention of falls research-based protocol.* In M. G. Titler (Series Ed.), Series on Evidence-Based Practice for Older Adults, Iowa City, I.A: The University of Iowa Gerontological Nursing Interventions Research Center, Research Translation and Dissemination Core.

A critique of systematic reviews and relevant literature was also conducted and through a process of consensus, the recommendations were developed. An initial draft of the RNAO *Prevention of Falls and Fall Injuries in the Older Adult* nursing best practice guideline was reviewed by stakeholders and responses were incorporated.

The guideline was published following a seven-month pilot implementation phase in a selected practice setting in Ontario. Practice settings for RNAO nursing best practice guidelines are identified through a "request for proposal" process.

Revision Process – 2005

The Registered Nurses' Association of Ontario (RNAO) has made a commitment to ensure that this best practice guideline is based on the best available evidence. In order to meet this commitment, a monitoring and revision process has been established for each published guideline.

A "current awareness" review has been completed on a quarterly basis since the nursing best practice guideline *Prevention of Falls and Fall Injuries in the Older Adult* was originally published. Guideline development staff reviewed abstracts published in key databases on the topic, focusing on systematic reviews, randomized controlled trials and recently published clinical practice guidelines. The purpose of this review was to identify evidence that would impact on the recommendations, either further supporting the published recommendations, or indicating that a recommendation was no longer appropriate. In the latter case, an "action alert" would be issued, or a full review would be conducted prior to the three-year schedule. No evidence of this nature was identified during the ongoing monitoring phase, and this guideline moved into the revision phase as originally scheduled.

In September of 2004, a panel of nurses and other healthcare professionals, from a range of practice settings and academic sectors, with expertise and interest in falls and fall injuries in the older population, was convened by the RNAO. This group was invited to participate as a review panel to revise the *Prevention of Falls and Fall Injuries in the Older Adult* guideline that was originally published in January 2002. This panel had representation from members of the original development panel, as well as other recommended specialists.

The panel members were given the mandate to review the guideline, focusing on the currency of the recommendations and evidence, keeping to the original scope of the document. A description of this work follows.

Preliminary Planning

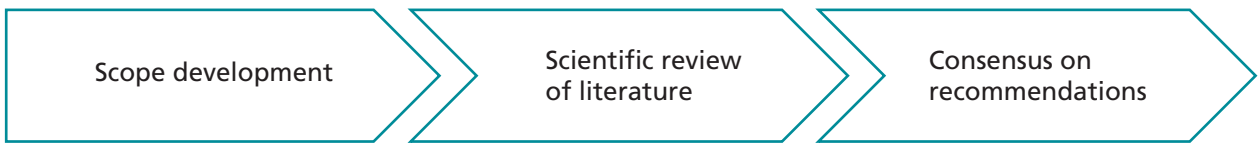
During the initial planning phase for the revision of the guideline, clinical questions and search terms based on the *original* recommendations were generated in consultation with the revision panel team leader. A subsequent search by a health sciences librarian generated numerous abstracts which were then reviewed by a masters prepared Research Assistant assigned to the project for the purpose of selecting articles that related to the clinical questions and to the original recommendations. The selected articles were reviewed by the Research Assistant who summarized the studies according to the following:

- Study type;
- Sample (number of subjects/characteristics);
- Intervention used in the study;
- Measures used in the study;
- Findings; and
- Limitations.

This summary was distributed to the panel.

Panel Methodology

The following graphic depicts the subsequent process for development of the revision of the RNAO guideline *Prevention of Falls and Fall Injuries in the Older Adult.*



Scope

In September 2004 representatives from the guideline revision panel met to discuss the scope of the revision. The purpose of this discussion was to revisit the original guideline with consideration of requirements for revision. The summary distributed in the preliminary planning phase resulted in a discussion on the relevance of the content of the 2002 guideline and the need for a methodology that included a revised set of clinical questions, and a more focused search of the literature. Strategies for rating and grading the evidence and developing the recommendations were also reviewed. The panel discussed many of the relevant interventions that should be investigated in the subsequent literature search and systematic review.

Scientific Review of the Literature

Beginning in October 2004, the development panel undertook a literature search *(Appendix A)* for evidence specific to falls and fall injuries among the elderly receiving care in health care settings. A literature search spanning the years 1999 to 2004 was conducted using the online database PubMed. The search parameters were age 65 and older, falls or accidental falls, and non-community. For the clinical recommendations, publication type was limited to systematic reviews, meta-analyses, randomized controlled trials (RCT), or controlled clinical trials. Where higher quality evidence was not available, less rigorous study designs, such as cohort studies, were included.

A total of 294 articles were returned by the search. Of these, 200 were excluded as they did not meet the inclusion criteria related to: age (over 65 years); and setting (receiving care in health care settings). Where appropriateness was indeterminable from the information provided in the abstract, the full text papers were retrieved and reviewed. Two independent reviewers (one panel member and one clinician assigned to the literature review) appraised all 94 papers selected for full review. A study selection form *(Appendix B)* was used to ensure consistent application of inclusion/exclusion criteria. All RCTs reviewed were subsequently appraised for bias using the Jadad tool (Jadad, et al. 1996).

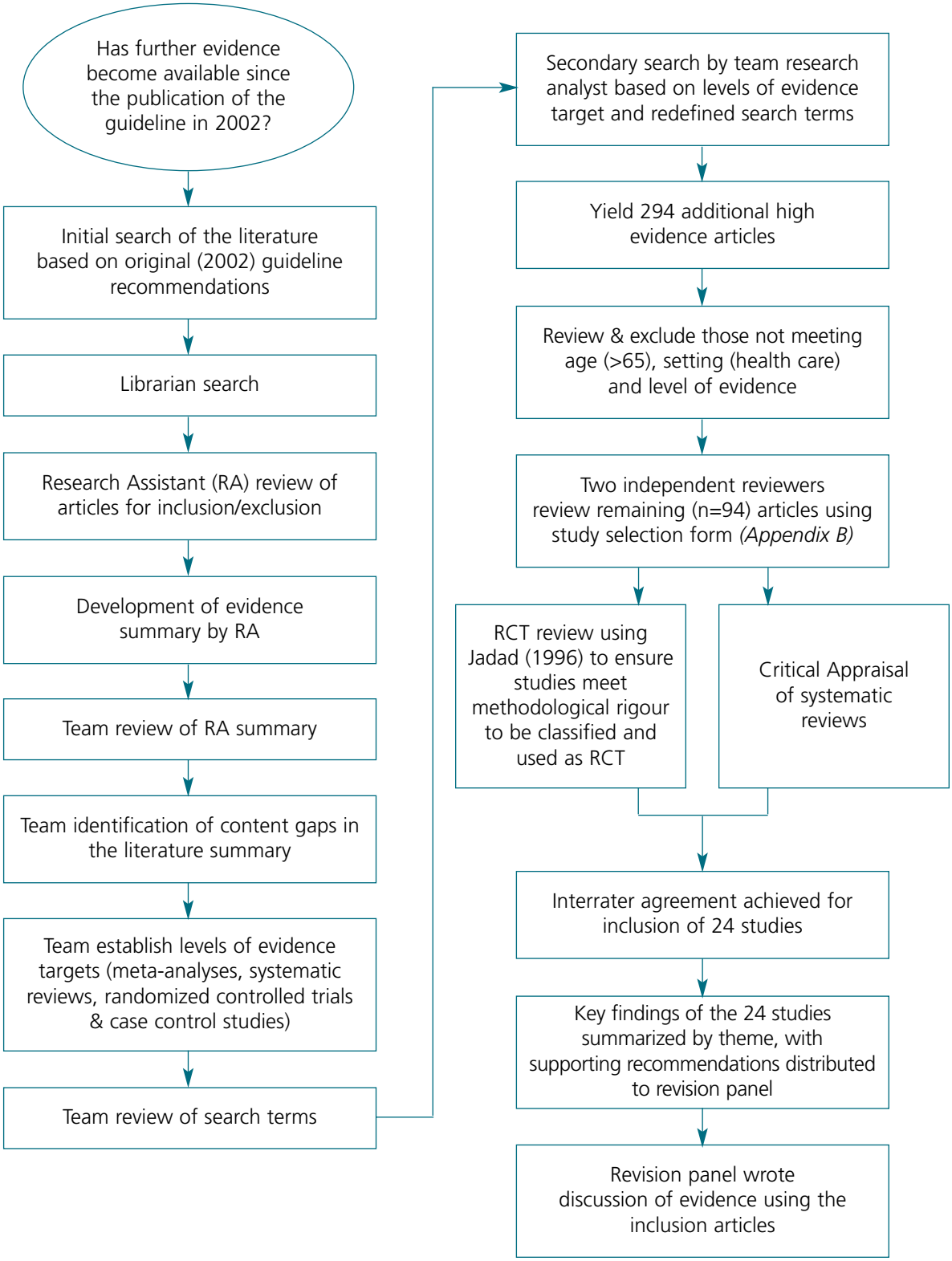
Upon completion of the appraisal, the working team met to discuss the appropriateness of each study for inclusion in the literature review. Where a discrepancy existed, reviewers discussed the nature of the disagreement and came to consensus on inclusion/exclusion. In all cases, the reviewers were able to reach agreement. In addition, both reviewers also compared Jadad scores and followed a similar process where disagreement existed. Twenty-four papers were included in the review.

The panel revision team then conducted a critical appraisal of all articles selected for inclusion in the literature review. The product of the work of this team included summaries of all articles selected for the literature review as well as a set of evidence-based recommendations that would serve as the basis for the revised guideline.

Consensus on Recommendations

In the final step of this process, the revision panel reconvened to discuss and review the literature. The previous recommendations were revised or deleted, and new additional recommendations were developed in accordance with the new evidence. Figure 1 summarizes the entire process.

Figure 1: Revision Methodology Process Flow



Definition of Terms

Clinical Practice Guidelines or Best Practice Guidelines: "Systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical (practice) circumstances" (Field & Lohr, 1990, p. 8). Clinical Practice Guidelines or Best Practice Guidelines are developed using the best available research findings and where research gaps are present, consensus processes.

Consensus: A process for making policy decisions, not a scientific method for creating new knowledge. At its best, consensus development merely makes the best use of available information, be that scientific data or the collective wisdom of the participants (Black et al., 1999).

Educational Recommendations: Statements of educational requirements and educational approaches/strategies for the introduction, implementation and sustainability of the best practice guideline.

Fall: An event that results in a person coming to rest inadvertently on the ground or floor or other lower level.

Family: Whomever the person defines as being family. Family members can include: parents, children, siblings, neighbours, and significant people in the community.

Grades of Recommendation: Grades associated with individual recommendations indicate the level of evidence upon which the recommendation is based, as well as the direction of the effect. For example, recommendations based on strong scientific evidence may receive a "good" grade, whereas those based on lower levels of evidence may receive a "fair" grade. In addition, evidence supporting the effectiveness of a given intervention would likely receive a recommendation to include the intervention in treating patients, whereas evidence showing a given intervention is inferior to an alternative approach may suggest that the intervention be excluded from patient care programs.

High Risk: The presence of one or more risk factors for falls as outlined in the assessment section of this guideline.

Informal Support: Support and resources provided by persons associated with the person receiving care. Persons providing informal support can include: family, friends, members of a spiritual community, neighbours, etc.

Institution: Health care facilities including acute, sub-acute, long-term care, complex continuing care, rehabilitation, and residential care.

Levels of Evidence: Levels of evidence indicate the strength of the scientific evidence upon which a recommendation is based. High quality scientific publications such as a randomized controlled trial are typically assigned a higher level of evidence than studies using different methodologies such as case-control studies.

Meta-analysis: Use of statistical methods to summarize the results of independent studies, which can provide more precise estimates of the effects of health care than those derived from the individual studies included in a review (Alderson, Green, & Higgins, 2004).

Multidisciplinary Care: A process where health care professionals representing expertise from various health care professionals collaboratively participate in the process of assessment, diagnostic evaluation, care planning, care conferences and treatment of clients (Jensen et al., 2003 & Vassalo et al., 2004b).

Odds Ratio: The odds ratio is a way of comparing whether the probability of a certain event is the same for two groups. An odds ratio of 1 implies that the event is equally likely in both groups. An odds ratio greater than one implies that the event is more likely in the first group. An odds ratio less than one implies that the event is less likely in the first group (Johnston, 2005).

Older adult: Individuals 65 years or older.

Organization & Policy Recommendations: Statements of conditions required for a practice setting that enable the successful implementation of the best practice guideline. The conditions for success are largely the responsibility of the organization, although they may have implications for policy at a broader government or societal level.

Practice Recommendations: Statements of best practice directed at the practice of health care professionals that are ideally evidence-based.

Restrain: To place a person under control by the minimal use of such force, mechanical means or chemicals as is reasonable having regard to the person's physical and mental condition (Legislative Assembly of Ontario, 2001).

Relative risk: A measure of how much a particular risk factor (e.g., previous fall) influences the risk of a specified outcome (e.g., fall). For example, a relative risk of 2 associated with a risk factor means that persons with that risk factor have a 2-fold increased risk of having a specified outcome compared to persons without that risk factor. A relative risk of 0.5 means that persons with that risk factor have half the risk of the specified outcome (a protective effect) compared to persons without the risk (protective) factor (Johnston, 2005).

Stakeholder: A stakeholder is an individual, group, or organization with a vested interest in the decisions and actions of organizations who may attempt to influence decisions and actions (Baker et al., 1999). Stakeholders include all individuals or groups who will be directly or indirectly affected by the change or solution to the problem.

Systematic Review: Application of a rigorous scientific approach to the preparation of a review article (National Health and Medical Research Centre, 1998). Systematic reviews establish where the effects of health care are consistent and research results can be applied across populations, settings, and differences in treatment (e.g., dose); and where effects may vary significantly. The use of explicit, systematic methods in reviews limits bias (systematic errors) and reduces chance effects, thus providing more reliable results upon which to draw conclusions and make decisions (Alderson, Green, & Higgins, 2004).

Background Context

Falls Statistics in Canada

According to the Canadian Institute for Health Information (CIHI, 2000), falls are the primary cause of injury admissions to Canada's acute care hospitals, accounting for 54.4% of all injury hospitalizations and 75.7% of all in-hospital deaths for clients admitted for injuries. In total, there were 197,002 hospital injury admissions in Canada, of which 54.4% were caused by falls in comparison to 15.1% caused by motor vehicle collisions. For seniors age 65 years and older, falls were the cause of 84.8% of all injury admissions. The report (CIHI, 2000) also indicates that the average age of injury admissions is rising from 47 years in 1995/1996 to 50 years in 1999/2000. In 1999/2000, there were 6,663 in-hospital deaths among clients hospitalized due to injuries, and 75.7% of these deaths were precipitated by a fall.

Falls are also the second leading cause of both head and spinal cord injuries (35% and 37%, respectively) (CIHI, 2004). The majority of specific fall-related hospitalizations for head injuries were falls on or from stairs or steps (25%), slipping, tripping or stumbling (17%) and falls from one level to another (11%). For spinal cord injury hospitalizations, the leading cause of injury for females was falls (42%). Up to 50% of elderly patients residing in nursing homes fall every year (Kiely, et al., 1998; Luukinen, et al., 1995; Rubenstein, Josephson, & Osterweil, 1996), with approximately 1.5 falls occurring per nursing home bed-years. About 40% of older adults who are hospitalized after a fall have suffered hip fractures, and approximately 7% of these result in death (SMARTRISK, 2004a).

In addition to pain and suffering for individuals and their families, fall-related injuries result in substantial economic burden to society (CIHI 2002). Direct health care costs relating to falls among seniors are estimated at $1 billion every year (SMARTRISK, 2004b). Canada's senior population is projected to grow to 5 million by 2011, which is more than 1/3 larger than the senior population in 1998 of 3.6 million. As this proportion continues to grow, the prevention of falls takes on even more importance. Although the average cost per case for unintentional falls ranked eighth among all causes, the injuries accounted for more than 60% of the total estimate. This is due to the fact that falls were the leading cause of trauma admissions in 2000/2001, accounting for 56% of all injury hospitalizations.

Identifying possible risk factors and falls prevention programs can prevent the majority of falls. A 20% reduction in falls would translate to an estimated 7,500 fewer hospitalizations and 1,800 permanently disabled elderly over the age of 65 (SMARTRISK, 2004c). The overall national savings could amount to $138 million annually (SMARTRISK, 2004c).

Falls Statistics in Ontario

In Ontario, falls were responsible for 80% of head injury hospitalizations in people age 65 and older in Ontario in 1998/99 (CIHI, 2000). Slipping, tripping or stumbling from the same level were the major reasons. Women were admitted to Ontario hospitals for injuries from falls twice as often as men. The CIHI report (2000) indicates that the average length of stay varies by gender, being seven days for males and 11 days for females in 1998/99.

Practice Recommendations

Assessment

Recommendation 1.0

Assess fall risk on admission. *Level Ib Grade B*

Discussion of Evidence

Fall risk assessment is important as it provides direction for the multiple interventions which have been shown to reduce a person's risk of falling. Commonly identified fall risk factors for elderly patients in health care settings include confusion, tranquillizer use, hearing deficits, cognitive impairment, previous stroke, previous falls, confusion/delirium, acute diseases and/or side effects of drugs (Kallin et al., 2004; Salgado et al., 2004; Vassallo et al., 2004a). Risk screening is an effective method for identifying fall-prone individuals. A systematic review of fall screening tools by Perrel et al. (2001) concluded that since all residents of long term care (LTC) were likely to be at high risk of falls, universal fall prevention maneuvers should be administered in this setting, and that various tools such as the Morse Fall Scale (Morse, Morse & Tylko, 1989), the STRATIFY risk assessment tool (Oliver et al., 1997) and the Hendrich II Fall Risk Model© (Hendrich et al., 1995) could be used. Assessment for fall risk is the key. The tool used must be appropriate for the setting and for the specific client population. Therefore, it is essential to assess the patient population in order to select a tool most appropriate for the setting. *Appendix C* contains information on how to access the tools discussed above.

Oliver et al. (2004) completed a systematic review of hospital fall risk assessment tools and reported that a few risk assessment tools were able to predict falls with sensitivity and specificity of greater than 70% and the common risk factors identified were gait instability, confusion, urinary frequency, previous falls and medications (i.e., sedative/hypnotics). The authors also proposed that an alternative to using risk assessment tools was to attend to reversible fall risk factors in all clients. Trials (Haines et al., 2004; Healy et al., 2004) which successfully reduced falls in hospital settings used screening assessments on which to base the choice of interventions for clients. Randomized controlled trials (RCT) conducted in long-term care (LTC) settings, (Becker et al., 2003; Jensen et al., 2002) found that screening may have served to better tailor individual multi-factorial interventions as different risk factors increased the risk of falls differently. While risk screening on admission does not directly reduce the incidence of falls in the older adult, the evidence indicates that it can help to choose the appropriate interventions for the subsequent reduction of falls. *Recommendation 2.2* has a further discussion of multi-factorial interventions. Table 3 contains a list of fall risk factors for hospital and LTC populations. The odds ratio (OR) represents the likelihood of a fall occurring in patients with these risk factors as compared to patients who do not have them.

Table 3: Risk Factors and Associated Odds of Falling

Risk Factor	Hospitalized	Nursing Home
History of a previous fall	OR, 2.76	OR, 3.41
Age	> 75	> 87 (OR, 1.16)
Gender	insufficient data	Male (OR, 1.14)
Medical conditions	Parkinson's disease, diabetes mellitus, arthritis, cerebrovascular accidents, recent hospitalization and illness via their effect on strength, balance, and proprioception can contribute to fall risk. Although these diseases cannot be altered, other risk factors may be modifiable to lower the patient's overall risk.	
Cognitive impairment	OR, 2.62-6.33	Wandering behaviour (OR, 1.84)
Balance and gait	insufficient data	Unsteady gait (OR, 1.13) Transfer independence (OR, 1.49) Wheelchair independence (OR, 1.39)
Ambulatory aids	Use of ambulatory aids (OR, 2.84)	Use of cane/walker (OR, 1.44)
Environmental hazards	insufficient data	Falls attributed to environmental factors: 27.3% in this population. Restraint use (OR, 10.2)
Drugs	Psychotrophic drugs: OR, 1.93-7.95	Polypharmacy (4+ medications) Benzodiazepines (adjusted RR, 1.44) Psychotrophics: 2-fold increase rate of falls Diuretics (OR, 7.2) Vasodilators (OR, 3.0)
Vision (decreased)	OR, 2.46	OR, 1.6
Systolic hypotension (<110 systolic)	insufficient data	OR, 2.0
Hospital ward	Geropsychiatry and rehabilitation wards with higher incidence of falls.	
Number of risk factors	Five factors, including fall as a presenting complaint, a low transfer or mobility score of 3 or 4, or the primary nurses' judgment that the patient was agitated, needed frequent toileting, or was visually impaired were found to predict falls in a hospital setting. Having more than two of these risk factors was defined as high risk.	

Source: Brown, C.J., & Norris, M., (2004) Falls: Physicians' Information and Education Resource (PIER.) American College of Physicians. Available: http://pier.acponline.org/physicians/screening/s168/pdf/s168.pdf

Recommendation 1.1

Assess fall risk after a fall. *Level Ib Grade B*

Discussion of Evidence

A fall in an elderly person is often a presentation of disease (sentinel fall), and a previous fall triples the odds of a client experiencing a future fall (American Geriatric Society, British Geriatric Society and American Academy of Orthopedic Surgeons Panel on Falls Prevention, 2001). An RCT in an American LTC facility has shown that resident assessment within seven days of a fall was effective at preventing subsequent hospitalization and reduced hospital days although it did not reduce fall rate (Rubenstein et al., 1990).

Intervention

Tai Chi

Recommendation 2.0

Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months and for those clients with no history of a fall fracture. There is insufficient evidence to recommend Tai Chi to prevent falls for clients with LOS less than four months. *Level Ib Grade B*

Discussion of Evidence

There is insufficient evidence to recommend Tai Chi to prevent falls for clients with length of stays (LOS) less than four months. Wolf et al. (2003) conducted a 48-week cluster randomized control study of 286 residents ("transitioning to frailty" ($\geq$ 70 yrs)) of congregate living facilities which are described as small (6-20 bed) supportive living facilities. The facilities were randomized to Tai Chi or wellness education for the duration and residents were evaluated for function, behaviour, and falls. The 48-week Tai Chi program showed no benefit in terms of fall prevention in comparison to wellness education. However, the Tai Chi group began to show a reduction in fall risk after four months of the program. In addition Tai Chi showed a significant reduction in falls among those without history of fall fracture.

Exercise

Recommendation 2.1

Nurses can use strength training as a component of multi-factorial fall interventions; however there is insufficient evidence to recommend it as a stand-alone intervention. *Level Ib Grade I*

Discussion of Evidence

There is insufficient evidence to recommend progressive strength training *alone* to prevent falls in the elderly. An RCT of exercise programs conducted by Nowalk et al. (2001) randomized 110 residents (average age 84 years) of two senior housing communities to Tai Chi, progressive strength training and no exercise (control) groups. Assessments were made at baseline, six, 12, 18 and 24 months following randomization. There was no difference in rate of falls or hospitalization between the three groups. Additionally, in comparison to Tai Chi and no exercise, progressive strength training appeared to impart no benefit in terms of falls reduction. These findings are consistent with those found by Gillespie et al. (2004) who conducted a systematic review of randomized controlled trials on various interventions for preventing falls in the elderly. In addition, Gillespie et al. (2004) referenced two additional papers (Donald et al., 2000; Mulrow et al., 1994) that investigated individually targeted exercise/physiotherapy in an institutional setting. As with Nowalk et al. (2001), exercise was found to impart no protective benefit against falls; therefore, exercise alone is not enough to prevent falls in the older adult.

Multi-factorial

Recommendation 2.2

Nurses, as part of the multidisciplinary team, implement multi-factorial fall prevention interventions to prevent future falls. *Level Ia Grade B*

Discussion of Evidence

Multi-factorial and targeted interventions can have a significant benefit in reducing and delaying falls in residents of LTC institutions (Becker et al., 2003; Jensen et al., 2002), sub-acute rehabilitation settings (Haines et al., 2004) and in-patients (Healy et al., 2004) as demonstrated by cluster randomized trials.

Jensen et al. (2002) demonstrated a reduced number of hip fractures and falls in nursing home residents with multi-factorial trials which included hip protectors offered to each resident. This effect was not reproduced in Becker et al. (2003), despite a beneficial effect on fall rate. Both of these trials included the following multi-factorial components: staff education, environmental modifications, exercise, mobility aids, medication review, hip protectors, and post-fall problem solving. The trials done in the sub-acute setting were effective at preventing falls and the intervention was based on an individualized multi-factorial assessment but did not include hip protectors (Haines et al., 2004). Care planning for patients admitted with a history of falls, and those who fell or had a near miss during their current admission, was successful at reducing falls, on an in-patient unit (Healey et al., 2004). Multi-factorial interventions utilizing lower intensity components (e.g., high/low risk logo on clothing, fall prevention manual) may actually increase the risk of falling (Kerse et al., 2004).

Therefore, nurses should consider individual risk factors and administer targeted, multi-factorial interventions consisting of one or more of the following components: staff education, environmental modifications, exercises, mobility aids, medication review, hip protectors, and post-fall problem solving. Multi-factorial interventions are often implemented by working in teams with rehabilitation staff such as occupational therapists and physical therapists. Pharmacists can help with medication review. Physicians participate in the team implementation of the multi-factorial intervention, particularly by helping in identifying diseases which present as falls and medications which may predispose to falls.

Medications

Recommendation 2.3

Nurses, in consultation with the health care team, conduct periodic medication reviews to prevent falls among elderly in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. There is fair evidence that medication review be conducted periodically throughout the institutional stay. *Level IIb Grade B*

Discussion of Evidence

Review of the client's medication regime can have an impact on reducing falls in the elderly. Psychotropic medications related to falling accidents were investigated by Leipzig et al. (1999a, 1999b). This systematic review identified 40 articles addressing this issue that would be included in the meta-analysis, none of which were randomized controlled trials. When the odds ratios from all studies were combined in meta-analysis, it was revealed that the pooled odds ratios for one or more falls ranged from 1.51 to 1.73 ($p < .05$ for all) for psychotropic medications and 1.48 ($p < .05$) for benzodiazepines, representing a significant relationship between falls and psychotropic medications and/or benzodiazepines. This meta-analysis included both community and individuals in health care facilities; however, when studies were stratified based on subject residence, there was no change in the pooled odds ratios for any drug class, except neuroleptics among psychiatrically hospitalized patients, indicating that the above-mentioned odds ratios apply to each group individually.

In a retrospective cohort study involving 2,428 nursing home residents, Thapa et al. (1998) compared users of antidepressants to non users. Tricyclic antidepressants, selective serotonin-reuptake inhibitors, and trazodone were found to double fall rates and this rate increase had a dose-response relationship. In particular, the rate of falls increased as dosage increased for tricyclic antidepressants and serotonin-reuptake inhibitors. In addition, when these medications were prescribed for dementia as opposed to depression, the result was an increase in falls.

It is not enough to review medications only on admission. Ray et al. (2002) evaluated concordance of two definitions of benzodiazepine use. A *baseline user* was someone who had taken a benzodiazepine in the seven days preceding follow-up and a *current user* was someone who was using a benzodiazepine on a given day of follow-up. Baseline user definition led to misclassification as only 44.6% of "users" actually used benzodiazepines during follow-up. The baseline definition did not discriminate users from non-users in terms of the number of falls, while the current user definition showed that users were more likely to fall than non-users. This study underscores the importance of reviewing benzodiazepine use throughout institutionalization, as opposed to only reviewing use upon admission. Misclassification results in substantial underestimation of the association between benzodiazepine use and fall risk and points to the importance of reviewing medications periodically throughout the hospital/institutional stay.

Elderly clients are often prescribed many different types of medications. The client's medication profile could be considered both an extrinsic (related to the environment) and intrinsic (specific to the individual) contributing factor to the risk for falling. Neutel et al. (2001) conducted a two-part study on 227 nursing home residents over the age of 65. Part I of the study described falls and drug use and found that falls were increased for patients taking greater than five medications compared to those who were taking less than five. Part II was a cross-over design comparing falls before and after a new drug. New starts of benzodiazepines/antipsychotics resulted in a higher risk of falling as compared to the pre-drug period. This further supports Ray's findings described above and indicates that polypharmacy among elderly clients (≥ 5 meds) leads to a greater risk of falling.

Hip Protectors

Recommendation 2.4

Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use of hip protectors among the elderly in health care settings.

Level Ib Grade B

Discussion of Evidence

There is no evidence to support universal use of hip protectors among institutionalized elderly. In a systematic review of randomized controlled trials, Parker, Gillespie and Gillespie (2001) found that studies involving randomization on an individual basis did not support the use of hip protectors in preventing hip fractures among the institutionalized (nursing home) elderly. Studies involving cluster randomization based on unit/ward; however, did support the use of hip protectors in the prevention of hip fracture among the institutionalized elderly considered at risk of falling. This further supports the need for appropriate risk screening (*Recommendation 1.0 and 1.1*) in order to reduce the risk of injury.

Vitamin D

Recommendation 2.5

Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style and treatment choice for the prevention of osteoporosis is relevant in relation to reducing the risk of fracture. *Level IV*

Discussion of Evidence

There have been several studies demonstrating a relationship between bone density at the femoral neck and an increased risk of fractures. It was noted that this risk increases with age (Cummings et al., 1995). The elderly receiving care in health care facilities are also at high risk for vitamin D deficiency, due to their lack of exposure to sunlight and age-related skin changes. A number of randomized controlled trials evaluated the association between vitamin D and calcium supplementation, and a reduction in falls and fall-related fractures (AMDA, 1998). There are also several randomized controlled trials providing evidence on the benefits of the prevention and treatment of osteoporosis, as outlined in peer review clinical practice guidelines for osteoporosis. The Osteoporosis Society of Canada provides clinical guidelines on the diagnosis, prevention and treatment of osteoporosis (See *Appendix E* for a list of resources).

There is evidence to suggest that vitamin D supplementation can reduce a person's risk for falls (Bischoff et al., 2003; Bischoff-Ferrari et al., 2004). Similar findings have been reported for older persons living in the community or in senior housing. Bischoff et al. (2004), in their meta-analysis of studies from all three settings, reported a statistically significant 22% reduction in the risk of falls among older persons who were being treated with vitamin D in comparison to those receiving calcium and a placebo.

Information for the client may include:

- Calcium and Vitamin D3 supplementation;
- Weight-bearing exercises, (e.g., walking); and
- Pharmacological management to maintain/improve bone strength (Kannus et al., 1999; National Ageing Research Institute, 2000).

Client Education

Recommendation 2.6

All clients who have been assessed as high risk for falling receive education regarding their risk of falling. *Level IV*

Discussion of Evidence

Falls education has been found to reduce the fear of falling and improve self-efficacy (Brouwer et al., 2003). Education can be delivered in a variety of ways and in a variety of settings. Individual sessions can create a non-threatening environment giving a more client-centred approach, allowing the client to ask questions and the nurse to do a more detailed assessment. Group sessions can save teaching time (Queensland Health, 2003) and allow clients to benefit from social interaction and to learn from others' experiences. When developing the education materials, factors affecting the aging process should be taken into consideration. It is important to recognize the early signs of dementia, such as loss of short term memory, difficulty in learning and retaining new information, language difficulties, mood swings and personality changes, progressive decline in the ability to perform activities of daily living and fluctuating awareness and orientation (Queensland Health, 2003). Refer to the RNAO guidelines *Screening for Delirium, Dementia and Depression in Older Adults (2003)* and *Caregiving Strategies for Older Adults with Delirium, Dementia and Depression (2004)* for more information about recognizing and working with clients with moderate to severe dementia.

The topics commonly included in falls education for patients include (Joanna Briggs Institute, 1998; Queensland Health, 2003):

- Educating the client and family/caregiver about the risk of falling, safety issues, and activity limitations;
- Teaching clients to make position changes slowly;
- Orientating clients to their bed area, ward facilities, and how to get assistance;
- Education programs for all new and high risk clients;
- Information on the aftermath of a fall;
- Strategies if unable to rise;
- First aid;
- Discussing treatment goals;
- Psychological issues;
- Informed choices around risk;
- Importance of staying active and being mobile; and
- Osteoporosis (i.e., promoting "Healthy Bones").

Environment

Recommendation 3.0

Nurses include environmental modifications as a component of fall prevention strategies.

Level Ib

Discussion of Evidence

In a RCT study of 20 residential care facilities, Dyer et al. (2004) included team assessment of environmental risk factors with written recommendations for addressing risk factors. Kerse et al. (2004) found assessment of environmental risk within common areas as well as patient rooms to be effective in reducing falls. Jensen et al. (2002), in a cluster randomized controlled non-blinded trial of nine residential care facilities in Sweden, recommended environmental modifications such as rearranging furniture that posed risk of falling, wiping wet areas on floors, clearing snow from the entrance of facilities, as well as providing grip bars and improved lighting. These items were also recommended by AMDA (1998) and Queensland Health (2003). In a RCT involving six community nursing homes in Germany, Becker et al. (2003) found environmental modifications of chair bed height, room clutter, and proper use of walking aids, grab bars and lighting as a component of a multifaceted intervention to be effective in reducing total falls, number of fallers and number of frequent fallers. In a quasi-experimental study, Vassalo et al. (2004) also included assessment of accessibility of a nurse call system and found it to be effective in reducing falls.

Education Recommendations

Nursing Education

Recommendation 4.0

Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to:

- **Promoting safe mobility;**
- **Risk assessment;**
- **Multidisplinary strategies;**
- **Risk management including post-fall follow-up; and**
- **Alternatives to restraints and/or other restricted devices.** *Level IV*

Discussion of Evidence

A variety of innovative strategies for learning (e.g., use of CD-ROM packages; online-based electronic-learning, e-learning, case studies, reflective practice discussion, and ethics rounds) related to restraint utilization can be developed to support students and nursing staff in their understanding of their roles and goals in the implementation of the guideline (Queensland Health, 2003). Principles of adult learning should be used in planning, implementing and evaluating educational sessions in order to enhance the nursing staff's/student's knowledge, skills and judgment around the application of the recommendations in this guideline. Students and nursing staff should be empowered to question and change practice with the support of clients/substitute decision maker, administrators, educators and other disciplines in efforts to support the guideline recommendations (Queensland Health, 2003).

The following topics should be included in falls prevention education materials for nurses (Queensland Health, 2003):

- Definition of falls;
- Falls statistics including frequency, outcomes, and costs (CIHI, 2000; National Centre for Injury Prevention and Control (NCIPC), 2004);
- Risk factors (intrinsic and extrinsic) associated with falling;
- Consequences of falls;
- Costs to the healthcare system (CIHI, 2000; NCIPC, 2004);
- Impact on quality of life, autonomy and "dignity of risk", ethical dilemmas;
- Assessment of falls including documentation and use of evidence-based falls assessment tools;
- Re-assessment;
- Falls prevention strategies such as client tailored interventions and attention to medication review; and
- Injury prevention strategies including assessment of environmental factors, alternatives to restraints, and post-fall follow up.

Organization & Policy Recommendations

Least Restraint

Recommendation 5.0

Nurses should not use side rails for the prevention of falls or recurrent falls for clients receiving care in health care facilities; however, other client factors may influence decision-making around the use of side rails. *Level III Grade I*

Discussion of Evidence

The use of side rails is not recommended for the prevention of falls or recurrent falls in the older adult. One retrospective cohort study (secondary analysis of data collected in a longitudinal, prospective clinical trial) examined the relationship between bilateral side rail use and bed-related falls/injuries among nursing home clients. This study revealed that there was no difference in risk of falls or recurrent falls with bilateral side rail use (Capezuti et al., 2002). When controlling for cognition and function the results were the same. The authors acknowledge that the clients' clinical characteristics can influence the decision-making process around bed rail use.

Key stakeholders including the College of Nurses of Ontario (CNO, 2004), the Ontario Hospital Association (OHA, 2001) and the restraint research-based protocol from the University of Iowa (Ledford, 1996). have guidelines to assist in decision making around the use of restraints. (See *Appendix E* for a list of resources).

Recommendation 6.0

Organizations establish a corporate policy for least restraint that includes components of physical and chemical restraints. *Level IV*

Discussion of Evidence

In a systematic review of patient injury and physical restraint devices, Evans et al. (2003) highlighted the potential danger of using physical restraints in acute care and residential care settings noting that physical restraint may increase the risk of death, falls, serious injury and prolonged hospitalization. On June 29, 2001, the Ontario Patient Restraint Minimization Act (Bill 85) received royal assent (Legislative Assembly of Ontario, 2001) (*Appendix D*). This legislation governs physical and chemical forms of restraint as well as monitoring devices, and applies to acute, chronic care and other healthcare facilities. Bill 85 defines restraint as placing a person under control by the minimal use of such force, mechanical means or chemicals as is reasonable having regard to the person's physical and mental condition. The Bill governs the use of restraints on patients, the confinement of patients and the use of monitoring devices in hospitals governed by the Public Hospitals Act and every facility governed by the Private Hospitals Act. Hospitals are prohibited from restraining, confining clients or using monitoring devices, unless it is necessary to prevent serious bodily harm to themselves or others. Requirements include assessment, use of alternatives, development of a plan of care, consent, physician order, monitoring and re-evaluation. It legislates policies of least restraint to encourage hospitals and facilities to use alternative methods wherever possible. The legislation defines restraints as any device that the client cannot easily remove and that restricts freedom of movement or normal access to his or her body. Required policy components are described as:

- Defining restraints authorized within the organization;
- Detailing assessment requirements; and
- Identifying and describing alternatives and family involvement, authorization, implementation, monitoring, care planning, and reassessment documentation and evaluation processes.

In policy development, organizations are advised to review legislation such as the Ontario Mental Health Act for sections related to the use of restraints. In addition, they are advised to review the Charter of Rights and Freedoms, which is a component of the Canadian Constitution. The OHA (2001) also recommends that health care settings include the multidisciplinary team in the policy development, and develop a committee within the organization to examine barriers to restraint reduction, evaluate ongoing restraint practices and identify an individual responsible for co-coordinating the committee and evaluation processes.

Organizational Support

Recommendation 7.0

Organizations create an environment that supports interventions for fall prevention that includes:

- **Falls prevention programs;**
- **Staff education;**
- **Clinical consultation for risk assessment and intervention;**
- **Involvement of multidisciplinary teams in case management; and**
- **Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms.** *Level IV*

Discussion of Evidence

In a review of evidence-based guidelines, Moreland et al. (2003) recommends that institutions develop systems for assessing and preventing falls. In a descriptive review of the literature, Shanley (2003) recommends that organizational support initiatives include making falls and injury prevention an explicit and important aspect of the facility's planning program and budget allocation, as well as promoting a culture of fall prevention. He describes systems that support ongoing practice change regarding fall prevention as including: establishment of procedures for multi-factorial falls prevention assessment and care planning that is fully understood and implemented by all staff; and appointment of an individual resource to staff who can support prevention initiatives. In a quasi-experimental study using a multidisciplinary team intervention, Vassallo et al. (2004b) identified a significant difference in the number of falls and fall injuries, recommending multidisciplinary falls prevention programs.

Healey et al. (2004) found pre-printed care plans as a method of risk reduction to be associated with a significant reduction of falls and with a significant difference between the control group. A few consensus-based falls prevention guidelines recommend the systems use of Resident Assessment Protocol (RAP) for the development of individualized care plans for the prevention of falls for residents in complex continuing care (AMDA, 1998; Queensland Health, 2003). The use of plans of care for the prevention of institutional falls is also recommended by AMDA (1998).

A number of randomized controlled trials demonstrating effectiveness in the reduction of falls have included education as an intervention (Becker et al., 2003; Dyer et al., 2004; Haines et al., 2004; Jensen et al., 2003; Kerse et al., 2004). Becker et al. (2003) provided staff with a one hour seminar and written information related to incidence, modifiable risk factors and other preventative measures. Kerse et al. (2004) added information about specific fall prevention strategies, indications for physical and occupational therapy. Jensen et al. (2003) extended the time available for staff education to four hours.

Completion of a falls or incident report following a fall is recommended (AMDA, 1998; Healey et al., 2004; Queensland Health, 2003; Rubenstein et al., 1996). In a survey of post-fall assessment in 379 long-term care facilities Miceli et al. (2004) recommended policies and procedures for post-fall management. Post-fall management should include:

- assessment of potential injury associated with the fall;
- immediate treatment following the fall; and
- determination of contributing factors, location, time and related activity.

In addition to the above, Jensen et al. (2002) concluded that post-fall problem-solving conferences, as one of several interventions, were effective in reducing falls.

Medication Review

Recommendation 8.0

Organizations implement processes to effectively manage polypharmacy and psychotropic medications including regular medication reviews and exploration of alternatives to psychotropic medication for sedation. *Level IV*

Discussion of Evidence

Jensen et al. (2003) and AMDA (1998) identify that a program for regular multidisciplinary medication reviews may assist in evaluating response to medications over time and how this is related to fall activity. Organizations subsequently, could benefit not only in terms of improved client outcomes, but in terms of the reducing the financial burden associated with falls and medication use (*Recommendation 2.3*).

RNAO Toolkit

Recommendation 9.0

Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes:

- **An assessment of organizational readiness and barriers to education.**
- **Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process.**
- **Dedication of a qualified individual to provide the support needed for the education and implementation process.**
- **Ongoing opportunities for discussion and education to reinforce the importance of best practices.**
- **Opportunities for reflection on personal and organizational experience in implementing guidelines.**

In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives and consensus. The *Toolkit* is recommended for guiding the implementation of the RNAO guideline *Prevention of Falls and Fall Injuries in the Older Adult.* *Level IV*

Discussion of Evidence

Graham et al. (2002) indicate that in order for guidelines to be implemented successfully, a critical step must be the formal adoption of the guidelines by the organization. One way this can be accomplished is by incorporating recommendations into policy and procedures. This key step helps to provide direction regarding the expectation of the organization and facilitates integration of the guideline into such systems as the quality management process.

New initiatives such as the implementation of best practice guidelines require strong leadership from nurses who are able to transform the evidence-based recommendations into useful tools that will assist in directing practice. It is suggested that the RNAO *Toolkit* (2002) be considered to assist organizations to develop the leadership required for successful implementation. Refer to *Appendix F* for a description of the RNAO *Toolkit: Implementation of Clinical Practice Guidelines.*

Research Gaps & Future Implications

Several authors have made suggestions for further research in the area of falls prevention. In a systematic review of the literature on acceptance and compliance with external hip protectors, van Schoor et al. (2002) has recommended evaluation of compliance of hip guard use. Weigand et al. (2001), in a randomized controlled trial of patients seen in emergency departments, recommended evaluating the effectiveness of clinical interventions to identify, counsel and refer emergency patients who are over the age of 65 years who are at high risk for an unintentional fall. Verhagen et al. (2002) recommended that more randomized controlled trials are required to evaluate the effect of Tai Chi in the elderly as it relates to the prevention of falls. More research on fall prevention in the hospital setting is recommended related to interventions that are effective in reduction of falls (Vassallo et al., 2004b), and associated with the frail elderly with impaired cognition (Jensen et al., 2003).

The revision panel, in reviewing the evidence for this guideline, has identified additional gaps in the research literature related to reducing falls and fall injuries in the older adult, particularly with respect to evidence using randomized approaches. In considering the research gaps, the following research priorities were identified that would benefit client outcomes:

- Explore the psychological effects of falls and/or fear of falling and the impact on clients' confidence to perform daily activities.
- Effectiveness of providing non-pharmacological approaches for clients with impaired cognition and emotional/behavioural care needs in reducing falls and fall injuries.
- Effectiveness of using a transfer plan based on individualized assessment and re-evaluation of the plan as the client's functional status changes.
- Effectiveness of specific forms of exercise to maximize mobility and physical activity in the older adult and prevent the number of falls. In particular, when is the best time to institute exercise/mobility programs and when are they most effective?
- Identify what fall prevention interventions are most effective in client populations with cognitive deficits/dementia.
- Identify strategies for developing individualized, evidence-based multi-factorial interventions founded on the relationship between risk factors and individualized clinical needs. The goal is to supplement clinical expertise in selecting components of the multi-factorial intervention with knowledge gathered from the scientific literature.
- Effectiveness of risk screening with consideration of specific populations represented among individuals receiving care in various health care facilities.

Evaluation/Monitoring of Guideline

It is suggested that organizations implementing the recommendations in this nursing best practice guideline consider how the implementation and its impact will be monitored and evaluated.

Whereas outcome evaluations possess several quantitative indicators driven largely by the literature base upon which this guideline was developed, implementation evaluations will often be more qualitative in nature and will focus on a sufficient allotment of resources (financial, personnel, subjects, etc.) required to support successful implementation/maintenance of the recommendations in the guideline.

To this end, several factors must be taken into consideration when implementing recommendations. It is essential that implementation proceed in a manner that is consistent with the circumstances, setting, and population investigated in the scientific literature upon which the recommendation is based, otherwise it is impossible to evaluate a departure of actual results from the expected outcomes. For example, the multi-factorial intervention recommendation requires that the components of the intervention be tailored to the individual's needs. If the facility implementing the recommendation decides instead to structure the multi-factorial interventions based on client group (for example, amputees vs. stroke patients), then the desired outcome of fall reduction may not be achieved. In this case, it is impossible to determine whether the desired outcome failed to be achieved because the intervention was ineffective, or whether the intervention was applied inappropriately. In addition, proper implementation ensures consistency across different facilities where multiple sites are involved.

It is recommended that any implementation of recommendations proceed with respect to the objectives of the implementation program. For each objective, administrative and personnel support must be sufficient for the objective to be achieved. In the absence of sufficient resources to both implement and ensure the sustainability of a program, the presence of a population of interest is of little value. The following factors for consideration will assist in ensuring the recommendations from this guideline have been implemented properly and will provide the foundation for a rigorous evaluation of its outcomes.

Objectives

1. What are the objectives of the implementation program?
2. What are the imposed timelines for achievement of objectives/interim goals?

Program Administration

1. Is there sufficient budget in place to cover expenses of the program? What time period is covered by funds?
2. What are the major costs? What are the capital/start-up/maintenance expenses?
3. What is the "per patient" cost of the program?
4. Are there contractual obligations in implementing the program? Will they be met?
5. What costs associated with the program will be borne by the facility's operating budget?
6. What are the internal/external reporting relationships associated with the program?
7. Will there be interim reviews of the program's effectiveness? What resources will be required?
8. Has an individual/committee been tasked with ongoing oversight of the program?

Program Staff

1. How many clinical/administrative/support staff will be required to implement the program?
2. Has staff been provided with a clear description of their roles/responsibilities?
3. What specialty staff is required?
4. What resources are required to train staff?
5. How will adequacy of training be evaluated?
6. What is staff turnover like on the unit? Has succession planning been considered in the work plan?
7. Are any external resources required to support the program?

Program Participants

1. For what population was the program designed (age, patient classification, level of function, etc.)?
2. What is the typical length of stay? Will it provide for sufficient data collection?
3. On what basis are participants selected for recruitment? What resources (clinical assessment, evaluation instruments, etc.) will be required to determine appropriateness for inclusion?
4. How have participants been grouped? I.e., if experimental and controls groups are desired, how are they to be randomized (individually, by room, by unit, etc.)?
5. Are there any systematic differences between experimental and controls groups (e.g., age, co-morbidities, functional capacity, disease state, etc.) that may affect the outcome of the program evaluation?
6. Has a contingency plan been prepared to account for patient drop-out? Poor compliance?
7. Will participants be actively involved in program? If so, how will program goals, and interim results be communicated to participants?

Other Programs

1. What other programs/guidelines have been/will be implemented during the course of the program?
2. What are their objectives?
3. Will programs conflict (i.e., staffing demands, resources)?

Shanley (2003) notes that systems for monitoring falls and associated fall injuries need to be comprehensive, easy to use and well integrated with other systems in the facility that includes a feedback and action process on results, such as with quality and risk management processes within organizations. Both AMDA (1998) and Queensland Health (2003) recommend use of existing quality improvement and or risk management systems for monitoring review of falls and the use of minimum data set (MDS) as a system source for complex continuing care clinical data, for evaluation of contributing factors associated with falls. As well, these guidelines recommend the monitoring of specific factors such as the incidence of injuries associated with falls, and associated clinical conditions such as functional ability.

The following table, based on a framework outlined in the RNAO *Toolkit: Implementation of Clinical Practice Guidelines* (2002) illustrates some indicators for monitoring and evaluation:

	Structure	Process	Outcome
Objectives	To evaluate the supports available in the organization that allow for nurses to prevent falls and fall injuries in the older adult.	To evaluate the changes in practice that lead towards improved outcomes with respect to falls and fall injuries.	To evaluate the impact of implementation of the recommendations.
Organization/ Unit	Review of best practice guideline recommendations by organizational committee(s) responsible for policies or procedures that relate to the recommendations in this guideline. Structures to support nurses to attend educational sessions. Structures to support nurses, and other professions, participation in risk assessment and collaborative consultation related to fall prevention. Availability of structured assessment tools/algorithms. Nurses' participation in committee meetings. Number of Resource Champions. Number of instruments used in the RNAO *Toolkit*. Type of equipment and supplies introduced. Alternatives to restraints are available and accessible.	Interdisciplinary approach to risk assessment and treatment. Number and types of professions involved in planning and implementation of fall prevention programs. Policies in place regarding informed consent.	Acute care recovery days related to falls. Readmission rates related to falls and fall injuries. Rehabilitation days related to falls. Presence of psychotropic utilization reviews. Best Practice Guideline is accessible to staff. Best Practice Guideline is incorporated into orientation of staff. Number of fall prevention program strategies implemented. Activity program utilization. Types of environmental changes made.

	Structure	Process	Outcome
Nurse/Provider	Number of staff attending educational sessions. Number of training days/hours.	Evidence of a structured assessment that guides assessment for risk factors. Evidence of documentation in client record consistent with guideline recommendations regarding: ■ Assessment; ■ Care Plan; and ■ Interventions to reduce falls and fall injuries.	Nurse satisfaction with guideline strategies for fall prevention. Nurse satisfaction with content and process of training. Documentation of falls. Application of implementation strategies (use of screening tools, environmental scans, prevalence studies).
Client	Organizational philosophy supports client's rights to risk taking, autonomy and self determination. Client's perspective, individual desires and needs are central to the application of the guideline. Client is an active participant around decisions regarding his/her care and in relation to these guidelines.	Number of consultations regarding mobility, seating, and risk of falls. Documentation regarding decisions on alternatives to, use of, consent for and monitoring of restrictive devices.	Number of falls. Number and nature of fall injuries. Number of repeated falls. Prevalence of use of assistive devices. Number of risk assessments completed on all new admissions and post-fall. Volume and type of restraint use. Client's satisfaction regarding fall prevention interventions.
Financial Costs	Implementation **costs** related to falls and fall injuries in the older adult including: ■ Cost of staff training; ■ Cost of supplies and equipment; ■ Cost of consultation training; ■ Cost of risk management; and ■ Documentation/monitoring system.	Impact on Case Mix Index (CMI) cost/pt. day related to fall injuries.	

Implementation Strategies

The Registered Nurses' Association of Ontario and the guideline development panel have compiled a list of implementation strategies to assist healthcare organizations or healthcare disciplines who are interested in implementing this guideline. A summary of these strategies follows:

- Have a dedicated person such as an advanced practice nurse or a clinical resource nurse who will provide support, clinical expertise and leadership. The individual should also have good interpersonal, facilitation and project management skills.

- Establish a steering committee comprised of key stakeholders and members committed to leading the initiative. Keep a work plan to track activities, responsibilities and timelines.

- Provide educational sessions and ongoing support for implementation. The education sessions may consist of presentations, facilitator's guide, handouts, and case studies. Binders, posters and pocket cards may be used as ongoing reminders of the training. Plan education sessions that are interactive, include problem solving, address issues of immediate concern and offer opportunities to practice new skills (Davies & Edwards, 2004).

- Provide organizational support such as having the structures in place to facilitate the implementation. For example, hiring replacement staff so participants will not be distracted by concerns about work and having an organizational philosophy that reflects the value of best practices through policies and procedures. Develop new assessment and documentation tools (Davies & Edwards, 2004).

- Identify and support designated best practice champions on each unit to promote and support implementation. Celebrate milestones and achievements, acknowledging work well done (Davies & Edwards, 2004).

- Organizations implementing this guideline should look at a range of self-learning, group learning, mentorship and reinforcement strategies that will over time, build the knowledge and confidence of nurses in implementing this guideline.

- Beyond skilled nurses, the infrastructure required to implement this guideline includes access to specialized equipment and treatment materials. Orientation of the staff to the use of specific products must be provided and regular refresher training planned.

- RNAO's Advanced/Clinical Practice Fellowships (ACPF) Project is another way that registered nurses in Ontario may apply for a fellowship and have an opportunity to work with a mentor who has expertise in the clinical area described in this guideline. With the ACPF, the nurse fellow will have the opportunity to hone their skills in prevention of falls and fall injuries in the older adult.

- Champions – Identify, develop and support Best Practice Champions and include people who have expertise in the topic area, facilitation skills, and knowledge of adult education principles in order to support, develop, mentor, and train other nurses within organizations to ensure knowledge transfer.

In addition to the strategies mentioned above, the RNAO has developed resources that are available on the website. A *Toolkit* for implementing guidelines can be helpful if used appropriately. A brief description of this *Toolkit* can be found in *Appendix F*. A full version of the document in PDF format is also available at the RNAO website, www.rnao.org/bestpractices.

Process for Update/Review of Guideline

The Registered Nurses' Association of Ontario proposes to update the best practice guidelines as follows:

1. Each nursing best practice guideline will be reviewed by a team of specialists (Review Team) in the topic area every three years following the last set of revisions.
2. During the three-year period between development and revision, RNAO nursing best practice guidelines program staff will regularly monitor for relevant literature. in the field.
3. Based on the results of the monitor, program staff will recommend an earlier revision period. Appropriate consultation with a team of members comprising original panel members and other specialists in the field will help inform the decision to review and revise the guideline earlier than the three-year milestone.
4. Three months prior to the three year review milestone, the program staff will commence the planning of the review process by:
   a. Inviting specialists in the field to participate in the Review Team. The Review Team will be comprised of members from the original panel as well as other recommended specialists.
   b. Compiling feedback received, questions encountered during the dissemination phase as well as other comments and experiences of implementation sites.
   c. Compiling new clinical practice guidelines in the field, systematic reviews, meta-analysis papers, technical reviews, randomized controlled trial research, and other relevant literature.
   d. Developing detailed work plan with target dates and deliverables.

The revised guideline will undergo dissemination based on established structures and processes.

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Appendix A: Search Strategy for Existing Evidence

The search strategy utilized during the revision of this guideline focused on two key areas. One was the identification of new guidelines published on the topic of the prevention of falls and fall injuries in the older adult since the original guideline was published in 2002, and the second was to identify systematic reviews, and primary studies published in this area from 2002 to 2004.

STEP 1 – DATABASE Search

A database search for existing evidence related to prevention of falls and fall injuries in the older adult was conducted by a university health sciences library. An initial search of the Medline, Embase and CINAHL databases for guidelines and studies published from 2001 to 2004 was conducted in August 2004. A subsequent search of PubMed was conducted in October 2004. The P. I. C. O. (Population, Intervention, Control, Outcome) method was used to generate the parameters of the clinical questions and to guide the search. The components of the P. I. C. O. method are:

- The type of Population involved;
- The type of Intervention investigated;
- The type of Control used as comparator; and
- The Outcomes to be addressed.

The parameters of each of the components are listed below.

- Population – institutionalized elderly at or over the age of 65
- Interventions
  - Special population
  - Footwear
  - Cognitive strategies, dementia
  - Hip protectors, Home safety, home hazard
  - Self care, activities of daily living (ADLs), life skills
  - Risk screening, Fall risk/risk factors
  - Tai Chi
  - Balance, Gait, Mobility, Strength
  - Exercise
  - Multi-factorial – or Single-intervention program
  - Vitamin D, Calcium
  - Vision
  - Continence
  - Efficacy
- Control – no intervention or alternate intervention
- Outcomes – reduction of falls, reduction of fall injuries

An example of a clinical question would be "Does exercise training reduce the incidence of falls in institutionalized elderly compared to those who did not undergo exercise training (or underwent an alternative 'control' intervention)?"

STEP 2 – Structured Web Site Search

One individual searched an established list of web sites for content related to the topic area in July 2004. This list of sites, reviewed and updated in May 2004, was compiled based on existing knowledge of evidence-based practice web sites, known guideline developers, and recommendations from the literature. Presence or absence of guidelines was noted for each site searched as well as date searched. The web sites at times did not house a guideline but directed to another web site or source for guideline retrieval. Guidelines were either downloaded if full versions were available or were ordered by phone/email.

- Agency for Healthcare Research and Quality: http://www.ahcpr.gov
- Alberta Heritage Foundation for Medical Research – Health Technology Assessment: http://www.ahfmr.ab.ca//hta
- Alberta Medical Association – Clinical Practice Guidelines: http://www.albertadoctors.org
- American College of Chest Physicians: http://www.chestnet.org/guidelines
- American Medical Association: http://www.ama-assn.org
- Bandolier Journal: http://www.jr2.ox.ac.uk/bandolier
- British Columbia Council on Clinical Practice Guidelines: http://www.hlth.gov.bc.ca/msp/protoguides/index.html
- British Medical Journal – Clinical Evidence: http://www.clinicalevidence.com/ceweb/conditions/index.jsp
- Canadian Centre for Health Evidence: http://www.cche.net/che/home.asp
- Canadian Cochrane Network and Centre: http://cochrane.mcmaster.ca
- Canadian Coordinating Office for Health Technology Assessment: http://www.ccohta.ca/
- Canadian Institute of Health Information: http://www.cihi.ca
- Canadian Task Force on Preventive Health Care: http://www.ctfphc.org
- Centers for Disease Control and Prevention: http://www.cdc.gov
- Centre for Evidence-Based Mental Health: http://cebmh.com
- Centre for Evidence-Based Nursing: http://www.york.ac.uk/healthsciences/centres/evidence/cebn.htm
- Centre for Evidence-Based Pharmacotherapy: http://www.aston.ac.uk/lhs/teaching/pharmacy/cebp
- Centre for Health Evidence: http://www.cche.net/che/home.asp
- Centre for Health Services and Policy Research: http://www.chspr.ubc.ca
- Clinical Resource Efficiency Support Team (CREST): http://www.crestni.org.uk
- CMA Infobase: Clinical Practice Guidelines: http://mdm.ca/cpgsnew/cpgs/index.asp
- Cochrane Database of Systematic Reviews: http://www3.interscience.wiley.com/cgi-bin/mrwhome/106568753/HOME
- Database of Abstracts of Reviews of Effectiveness (DARE): http://www.york.ac.uk/inst/crd/darehp.htm
- Evidence-based On-Call: http://www.eboncall.org
- Guidelines Advisory Committee: http://gacguidelines.ca
- Institute for Clinical Evaluative Sciences: http://www.ices.on.ca
- Institute for Clinical Systems Improvement: http://www.icsi.org/index.asp
- Institute of Child Health: http://www.ich.ucl.ac.uk/ich
- Joanna Briggs Institute: http://www.joannabriggs.edu.au
- Medic8.com: http://www.medic8.com/ClinicalGuidelines.htm
- Medscape Women's Health: http://www.medscape.com/womenshealthhome
- Monash University Centre for Clinical Effectiveness: http://www.med.monash.edu.au/healthservices/cce/evidence
- National Guideline Clearinghouse: http://www.guidelines.gov
- National Institute for Clinical Excellence (NICE): http://www.nice.org.uk
- National Library of Medicine Health Services/Technology Assessment Test (HSTAT): http://hstat.nlm.nih.gov/hq/Hquest/screen/HquestHome/s/64139
- Netting the Evidence: A ScHARR Introduction to Evidence-Based Practice on the Internet: http://www.shef.ac.uk/scharr/ir/netting
- New Zealand Guidelines Group: http://www.nzgg.org.nz

- NHS Centre for Reviews and Dissemination: http://www.york.ac.uk/inst/crd
- NHS Nursing & Midwifery Practice Development Unit: http://www.nmpdu.org
- NHS R & D Health Technology Assessment Programme: http://www.hta.nhsweb.nhs.uk/htapubs.htm
- NIH Consensus Development Program: http://consensus.nih.gov/about/about.htm
- PEDro: The Physiotherapy Evidence Database: http://www.pedro.fhs.usyd.edu.au/index.html
- Queen's University at Kingston: http://post.queensu.ca/~bhc/gim/cpgs.html
- Royal College of General Practitioners: http://www.rcgp.org.uk
- Royal College of Nursing: http://www.rcn.org.uk/index.php
- Royal College of Physicians: http://www.rcplondon.ac.uk
- Sarah Cole Hirsh Institute – Online Journal of Issues in Nursing: http://fpb.cwru.edu/HirshInstitute
- Scottish Intercollegiate Guidelines Network: http://www.sign.ac.uk
- Society of Obstetricians and Gynecologists of Canada Clinical Practice Guidelines: http://www.sogc.medical.org/sogcnet/index_e.shtml
- SUMSearch: http://sumsearch.uthscsa.edu
- The Qualitative Report: http://www.nova.edu/ssss/QR
- Trent Research Information Access Gateway: http://www.shef.ac.uk/scharr/triage/TRIAGEindex.htm
- TRIP Database: http://www.tripdatabase.com
- U.S. Preventive Service Task Force: http://www.ahrq.gov/clinic/uspstfix.htm
- University of California, San Francisco: http://medicine.ucsf.edu/resources/guidelines/index.html
- University of Laval – Directory of Clinical Information Websites: http://132.203.128.28/medecine_

STEP 3 – Search Engine Web Search

A web site search for existing practice guidelines on prevention of falls and fall injuries in the older adult was conducted via the search engine "Google", using key search terms. One individual conducted this search, noting the results of the search, the web sites reviewed, date and a summary of the results. The search results were further reviewed by a second individual who identified guidelines and literature not previously retrieved.

STEP 4 – Hand Search/Panel Contributions

Additionally, panel members were asked to review personal archives to identify guidelines not previously found through the above search strategy. Results of this strategy revealed no additional clinical practice guidelines.

SEARCH RESULTS:

The search strategy described above resulted in the retrieval of numerous abstracts on the topic which were then screened by a research assistant according to inclusion/exclusion criteria related to the target population, intervention, control and outcome. This resulted in a set of abstracts that were identified for article retrieval and quality appraisal.

In addition, two clinical practice guidelines were identified for review by the panel. These guidelines included:

- Queensland Health. (2003). Falls Prevention: Best Practice Guideline. http://www.health.qld.gov.au/fallsprevention/best_practice/default.asp
- Salsbury Lyon, S. (2004). Fall prevention for older adults evidence-based protocol. Fall prevention for older adults evidence-based protocol. In M. G. Titler (Series Ed.), Series on Evidence-Based Practice for Older Adults, Iowa City, IA: The University of Iowa College of Nursing Gerontological Nursing Interventions Research Centre, Research Translation and Dissemination Core.

Appendix B: Study Selection Form

Citation: _____

Name of Reviewer: _____ Date of Review: _____

Selection Criteria (check where appropriate)

Level of Evidence

❑ Ia ❑ Ib ❑ IIa ❑ IIb ❑ III ❑ IV

Population

❑ Were the Ss institutionalized?

❑ Were the Ss > 65 yrs of age?

Ss = Subjects

Study Intervention

❑ For investigation of multidimensional exercise interventions, did the authors apply an analysis appropriate to determine the contributions of the individual components?

❑ Did the intervention involve at least one of the following:

- ❑ Special population
- ❑ Cognitive strategies, dementia
- ❑ Self care, ADLs, life skills
- ❑ Tai Chi
- ❑ Exercise
- ❑ Vitamin D, Calcium
- ❑ Continence
- ❑ Footwear
- ❑ Hip protectors, home safety, home hazard
- ❑ Risk screening, fall risk/risk factors
- ❑ Balance, Gait, Mobility, Strength
- ❑ Multi-factorial – or Single-intervention program
- ❑ Vision
- ❑ Efficacy

Control Intervention

❑ Did the control group receive either no intervention or an alternative 'control' intervention (e.g., pamphlets)?

Outcomes

❑ Was one of the measured outcomes a documented or reported episode of accidental fall?

ACTION: Include: _____ Exclude: _____

Reason(s) for exclusion: _____

_____

_____

_____

Source: West Park Healthcare Centre, Toronto, Ontario. Reprinted with permission.

Appendix C: Tools for Risk Assessment

1. *Morse Fall Scale*

Author: Morse, J. M., Morse, R., & Tylko, S. (1989)

The Morse Fall Scale (MFS) (Morse, Morse, & Tylko, 1989) is used widely in acute care settings, both in hospital and long-term care inpatient settings. The MFS requires systematic, reliable assessment of a client's fall risk factors upon admission, after a fall, with a change in status, and at discharge or transfer to a new setting.

Available: The National Center for Patient Safety (NCPS)
http://www.patientsafety.gov/SafetyTopics/Falls/FallPrev/Morse.html

2. *STRATIFY (St. Thomas Risk Assessment Tool in Falling Elderly Inpatients)*

Author: Oliver, D., Britton, M., Martin, F. C., & Hopper, A. H. (1997)

The St. Thomas's risk assessment tool (STRATIFY) (Oliver et al., 1997) is used to identify clinical fall risk factors in the elderly and to predict chance of falling.

Available: Dr. Oliver
Address: Department of Elderly Care (Division of Medicine)
United Medical and Dental Schools,
St. Thomas's Hospital
London, UK SE1 7EH

3. *Hendrich II Fall Risk Model©*

Author: Hendrich, A., Nyhuuis, A., Kppenbrock, T., & Soja, M. E. (1995)

The Hendrich II Fall Risk Model© (Hendrich, Nyhuuis, Kppenbrock, & Soja, 1995) is used both nationally and internationally to identify patients at risk for falls.

Contact: Ann Hendrich, Inc.
P.O. Box 50346
Clayton, MO 63105
U.S.A.
Phone: (866) 653-6660

Licensing information available at: http://www.ahendrichinc.com/new_license.php

Appendix D: Patient Restraints Minimization Act, 2001

Legislative Assembly of Ontario

Bill 85: Patient Restraints Minimization Act, 2001

Title: An Act to minimize the use of restraints on patients in hospitals and on patients of facilities.

Explanatory Note:

The Bill governs the use of restraints on patients in hospitals and on patients of such facilities and organizations as are specified in the regulations (called "facilities" in the Bill). However, the Mental Health Act continues to govern the use of restraints on persons in psychiatric facilities. The Bill also governs the confinement of patients in hospitals and facilities to prevent serious bodily harm to themselves or to others, and the use of monitoring devices for that purpose.

Hospitals and facilities are prohibited from restraining or confining patients or from using monitoring devices on them except in the circumstances described in sections 5 and 6 of the Bill.

Hospitals and facilities are required to establish policies with respect to restraining and confining patients and using monitoring devices on them, and with respect to the use of alternative methods to prevent serious bodily harm by patients to themselves and others. The policies must encourage the use of alternative methods, whenever such methods are reasonably available.

Hospitals and facilities are also required to monitor and reassess patients who are under restraint, are confined or on whom a monitoring device is being used. The regulations set out the requirements to be met for monitoring and reassessing such patients.

Only physicians and persons specified in the regulations are authorized to write an order to restrain or confine a patient in a hospital or facility or to use a monitoring device on such a patient. The regulations may prohibit the use of standing orders for restraint, confinement or the use of monitoring devices.

Stakeholders

1) Canadian Institute for Health Information
   Quality of Chronic Care in Ontario Improving
   Press release, November 1, 2000

2) National Institute of Nursing Research. *Long Term Care for Older Adults* (1994), Chap. 5, "Problems Associated with the Use of Physical Restraints".

Appendix E: Resources and Useful Web sites

Resource	Source
■ Restorative Care Education and Training Program	The Centre for Activity and Aging The University of Western Ontario London, Ontario N6G 1K7 Phone: (519) 661-1603 Fax: (519) 661-1612 http://www.uwo.ca/actage/comm_collaboration/raetp.htm
■ Restraints	College of Nurses of Ontario http://www.cno.org/docs/prac/41043_Restraints.pdf
■ Report of the Restraints Task Force: Minimizing the use of Restraints in Ontario Hospitals	Ontario Hospital Association (November 2, 2001) http://www.oha.com (See Reports and Studies)
■ Patient Restraints Minimization Act, 2001	Ontario Legislative Library http://www.e-laws.gov.on.ca:81/isysquery/IRL1DFE.tmp/1/doc
■ Clinical Practice Guidelines for the Diagnosis and Management of Osteoporosis	Scientific Advisory Board, Osteoporosis Society of Canada (1996). Clinical practice guidelines for the diagnosis and management of osteoporosis. *Canadian Medical Journal,* 155, 1113-33. http://www.osteoporosis.ca

Appendix F: Description of the Toolkit

Best practice guidelines can only be successfully implemented if there are: adequate planning, resources, organizational and administrative support as well as appropriate facilitation. In this light, RNAO, through a panel of nurses, researchers and administrators has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives and consensus. The *Toolkit* is recommended for guiding the implementation of any clinical practice guideline in a health care organization.

The *Toolkit* provides step-by-step directions to individuals and groups involved in planning, coordinating, and facilitating the guideline implementation. Specifically, the *Toolkit* addresses the following key steps:

1. Identifying a well-developed, evidence-based clinical practice guideline
2. Identification, assessment and engagement of stakeholders
3. Assessment of environmental readiness for guideline implementation
4. Identifying and planning evidence-based implementation strategies
5. Planning and implementing evaluation
6. Identifying and securing required resources for implementation

Implementing guidelines in practice that result in successful practice changes and positive clinical impact is a complex undertaking. The *Toolkit* is one key resource for managing this process.

The *Toolkit* is available through the Registered Nurses' Association of Ontario. The document is available in a bound format for a nominal fee, and is also available free of charge from the RNAO website. For more information, an order form or to download the *Toolkit*, please visit the RNAO website at www.rnao.org/bestpractices.

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Nursing Best Practice Guidelines

Prevention of Falls and Fall Injuries in the Older Adult

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NURSING BEST PRACTICE GUIDELINES PROGRAM