



FALLS PREVENTION AMONG  
SENIORS LIVING AT HOME:  
PRELIMINARY RECOMMANDATIONS  
FOR CLINICAL PRACTICE GUIDELINES



MEDICAL SECTOR  
**Preventive clinical  
practices**  
[ PCP ]



HOME-SUPPORT SECTOR  
Individualized multifactorial  
intervention tools  
[ IMI ]



COMMUNITY SECTOR  
Stand up! Program  
[ PIED ]  
(non-individualized multifactorial  
intervention)



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(non-individualized  
multifactorial intervention)

**Québec** 

- Institut national de santé publique
- Agence de la santé et des services sociaux de la Capitale-Nationale

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## **SUGGESTED READING**

Gagnon C., Lafrance M. (2011) *Prévention des chutes auprès des personnes âgées vivant à domicile. Recommandations préliminaires à l'élaboration d'un guide de pratique clinique*. Institut national de santé publique du Québec, June 2011.

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## LIST OF ABBREVIATIONS

AUDIT	Alcohol Use Disorder Identification Test (screening test for abusive alcohol consumption)
CAGE	<b>C</b> ut down, <b>a</b> nnoyed by criticism, <b>g</b> uilty about drinking, <b>e</b> ye-opener drinks (CAGE) questionnaire (screening test for abusive alcohol consumption),
GRADE	Grading of Recommendations Assessment, Development and Evaluation
mg	milligram
min	minute
ml	millilitre
NNT	number needed to treat: number of people requiring a particular intervention in order to avert an event that one is trying to prevent
IU	international unit



## **1 BACKGROUND**

Falls among seniors are a major public health problem. We estimate that approximately 30% of people aged 65 or over fall every year, with serious consequences at individual, family and social levels.

A number of effective interventions have been developed to prevent falls among the elderly, and physicians will be asked to include them in their practice. Therefore, it is essential to draw up and disseminate falls prevention practice guidelines that are based on recent scientific data and that reflect the conditions in which physicians practice in Québec.



## **2 GENERAL OBJECTIVE**

To make recommendations on interventions that should be included in practice guidelines for physicians who treat people 65 years of age or over living at home.



### 3 METHODOLOGY

In 2005, the Institut national de santé publique du Québec (INSPQ) formed a scientific committee of public health professionals, geriatricians and family physicians — namely, the Comité scientifique provincial sur la prévention des chutes — to provide the INSPQ with expert advice and assistance for preparing and adopting recommendations.

The recommendations presented in this publication are based on two types of approaches:

- a **systematic literature review coupled with meta-analysis**, designed to provide a quantitative assessment of the effectiveness of falls prevention interventions. Recommendations have been made for each intervention and the strength of the recommendations has been graded using the process proposed by the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) Working Group;
- a **traditional, narrative literature review**, aimed at identifying: the relationship between falls and a series of risk factors that were not covered by the systematic review, and the role of interventions that can modify these factors. This information was then used to draw up recommendations.

It is important to point out that the recommendations presented here were prepared taking into account the context in which physicians practice. However, the interventions described in the studies on which the recommendations are based were performed by a range of health professionals.





## 4 FINDINGS

### Effectiveness of falls prevention interventions and quality of scientific evidence

- **Exercise programs** (including muscle strengthening and balance exercises or Tai Chi) reduce the number of seniors who fall by 13%. The decrease in fallers is particularly marked among seniors who do Tai Chi, i.e. 24%. There is also a marked decrease in the number of times they fall, i.e. 37%. **The quality of the evidence is high.**
- First-eye **cataract surgery** leads to a significant decline of 34% in falls among people aged 65 or over. **The quality of the evidence is high.**
- **Home adaptation** reduces the number of seniors who fall by 20%. Individuals whose vision is seriously impaired benefit in particular from this type of intervention (41% decrease in the number of fallers). **The quality of the evidence is high.**
- **Vitamin D supplements** at doses of 700 or 800 IU a day, in combination with calcium supplements (> 500 mg a day), lead to a 19% decrease in the number of fallers. **The quality of the evidence is high.**
- **Medication review** reduces the number of seniors who fall by 27%. **The quality of the evidence is moderate.**
- In just one study assessing the effectiveness of **pacemakers in seniors with carotid sinus hypersensitivity**, falls decreased by 69%. **The quality of the evidence is high.**
- In just one study assessing the effectiveness of **slip-on traction devices**, falls were reduced by 58% and falls with injuries by 87%. **The quality of the evidence is high.**
- It is more difficult to quantify the impact of **multifactorial interventions** on falls because of the heterogeneous nature of the studies concerned. Nevertheless, most multifactorial studies generally show that multifactorial interventions are effective when at least the three following types of interventions are involved: home adaptation, medication review and exercise programs.

### Traditional narrative literature review

The following risk factors were studied during the narrative literature review: fear of falling, orthostatic hypotension, cognitive impairment, urinary incontinence and nocturia, alcohol consumption, depression, foot pathology and the quality of footwear, and undernutrition. The literature review highlighted the links between these factors and the risk of falling and made it possible to identify which interventions can reduce the factors' impact.



## 5 RECOMMENDATIONS

Detailed recommendations based on the findings of the systematic review and the traditional narrative review are presented in sections 4.6 and 5.0 respectively of the publication\* on which this summary is based. In addition, for each recommended intervention, the committee members identified conditions to promote its implementation. These conditions, which are tied to resource availability, physician practices, training or research, were also the focus of recommendations. A general consensus was reached on all the recommendations, without putting them directly to a vote. Their final version is presented in the following pages, along with a falls prevention checklist.

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\* *Prévention des chutes auprès des personnes âgées vivant à domicile : analyse des données scientifiques et recommandations préliminaires à l'élaboration d'un guide de pratique clinique.*  
[http://www.inspq.qc.ca/pdf/publications/1241\\_PrevChutesPersAgeesAnalyseRecomm.pdf](http://www.inspq.qc.ca/pdf/publications/1241_PrevChutesPersAgeesAnalyseRecomm.pdf)



## 6 CONCLUSION

This study has highlighted the effectiveness of several interventions to prevent falls among seniors and made it possible to formulate recommendations tailored to the context in which physicians practice in Québec. The scientific context of this publication may no doubt also be of use to other health professionals interested in preventing falls among the elderly and preserving their autonomy, regardless of whether they work in an interdisciplinary or individual setting.

Obviously, the interventions discussed here are expected to have benefits beyond falls prevention. In several cases, such benefits will be reflected in the quality of life, well-being and autonomy of seniors.

In its present form, the content of this publication is intended primarily for the ministère de la Santé et des Services sociaux. Now that the scientific data analysis and recommendations are complete, the next step is to disseminate the relevant information through practical tools intended for physicians and their co-workers.



**APPENDIX 1**  
**RECOMMENDATIONS**





## RECOMMENDATIONS EXERCISE PROGRAMS

### Considering:

- The benefits of exercise on the preservation of autonomy, social ties and health in general;
- The beneficial impact of Tai Chi on self-confidence and reduced fear of falling;

### and:

The effectiveness of exercise programs (including muscle strengthening and balance exercises or Tai Chi) for preventing falls:

- Decrease of 13% (NNT : 15) in the number of fallers, with any of the above types of exercise;
- Decrease of 24% (NNT: 11) in the number of fallers and 37% in the number of falls in the Tai Chi subgroup.

⇒ High quality evidence\* (⊕⊕⊕⊕)

### THE COMMITTEE RECOMMENDS:

that physicians recommend exercise as a falls prevention measure to all of their clients aged 65 or over, except in cases where exercise is contraindicated.

⇒ **Strong recommendation**

that physicians recommend Tai Chi in particular.

⇒ **Strong recommendation**

that physicians refer older clients to group falls prevention exercise programs.

⇒ **Strong recommendation**

that physicians refer the following clients to specific resources for individualized exercise programs:

- people who are most at risk of injury when they fall;
- people who need a program tailored to their state of health.

⇒ **Strong recommendation**

\* The GRADE system rates the quality of scientific evidence as high (⊕⊕⊕⊕), moderate (⊕⊕⊕), low (⊕⊕) or very low (⊕).

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- provide people 65 years of age or over living at home with:
  - information on the importance of exercise programs that include muscle strengthening and balance exercises as a means of preventing falls and preserving autonomy, social ties and well-being,
  - the information they need to take part in exercise programs that are known to be effective and that are available in their community;
- provide physicians with:
  - information on the benefits and rare contraindications of falls prevention exercise programs, even for the very elderly,
  - the information they need to successfully refer clients to programs in their community that are known to be effective for preventing falls,
  - information on the various resources available to assess people who need individually adapted programs to prevent falls with injuries;
- make group exercise programs that include at least 90 minutes of strengthening and balance exercises a week available in the community in order to take full advantage of the health benefits of such programs;
- promote the formation of Tai Chi groups led by qualified instructors.

## RECOMMENDATIONS INTERVENTIONS TO IMPROVE VISION

### Considering:

- The high prevalence of visual impairments among the elderly;
- The fact that visual pathology screening followed by intervention is included in most multifactorial studies shown to be effective;
- The fact that visual acuity testing with a Snellen optotype is included in periodic medical examinations of seniors;
- The low risks associated with cataract surgery and the anticipated improvement in quality of life;

### and:

The effectiveness of cataract surgery for preventing falls:

- Significant decrease of 34% in falls following first-eye cataract surgery:  
⇒ High quality evidence (⊕⊕⊕⊕)

The effectiveness of adapting the home environment of people with a major visual impairment for preventing falls (see home adaptation recommendations).

- ⇒ High quality evidence (⊕⊕⊕⊕)

### THE COMMITTEE RECOMMENDS:

that physicians ensure seniors have their eyesight tested periodically to check for:

- the presence of cataracts;
- the presence of major visual impairments (10/35 or less), in order to identify people who could benefit from having their home environment assessed and adapted.

- ⇒ **Strong recommendation**

that physicians recommend cataract surgery for people who could benefit from it.

- ⇒ **Strong recommendation**

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- make family physicians, ophthalmologists and optometrists aware that cataracts are a major risk factor for falls among the elderly and that early surgery is important for these clients;
- make cataract removal available for all seniors who should have this surgery and make it available rapidly for people at risk of falling and injury.

## RECOMMENDATIONS HOME ADAPTATION

### Considering:

The advantages of adapting seniors' homes to promote functional autonomy and safety;

### and:

The effectiveness of adapting seniors' home environment\* to prevent falls:

- Decrease of 20% (NNT : 9) in the number of fallers,
- Decrease of 32% in the number of falls,  
⇒ High quality evidence (⊕⊕⊕⊕)
- Decrease of 41% (NNT : 4) in the number of falls in the subgroup of people with a major visual impairment;  
⇒ High quality evidence (⊕⊕⊕⊕)

### THE COMMITTEE RECOMMENDS:

that physicians refer the following clients for a home environment assessment (including a visit to their home and follow-up) by a qualified professional as soon as possible:

- seniors who have just been discharged from hospital or a rehabilitation centre;
  - seniors who fall repeatedly (2 falls or more a year);
  - seniors with a major visual impairment (10/35 or less).
- ⇒ **Strong recommendation**

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- ensure that enough resources are available to conduct home assessments and provide follow-up within a reasonable time frame;
- ensure that community resources (list of service providers, financial support, installation assistance, provision of equipment, etc.) are available to help seniors who require adaptations to their home.

\* In the various studies consulted, this intervention included a home visit and follow-up.

## RECOMMENDATIONS VITAMIN D AND CALCIUM

### Considering:

- The high prevalence of vitamin D deficiency among Canadians;
- The fact that food sources of vitamin D are insufficient for attaining recommended daily intakes, despite compliance with Canada's Food Guide;
- The role of vitamin D and calcium in preventing osteoporosis;
- The benefits of vitamin D on people's general state of health;
- The safety of vitamin D use at recommended doses;
- The undesirable effects of calcium supplements;

### and:

The effectiveness of vitamin D (700 or 800 units a day in the case of vitamin D3) taken in combination with calcium supplements (> 500 mg a day) for preventing falls:

- Decrease of 19% (NNT : 19) in the number of fallers;  
⇒ High quality evidence (⊕⊕⊕⊕)

### THE COMMITTEE RECOMMENDS:

that physicians ensure that all older adults take a vitamin D3 supplement of 800 to 1 000 units, plus 200 mg of calcium (from food sources with supplements if necessary), on a daily basis.

⇒ **Strong recommendation**

### Note:

To prevent osteoporosis, Osteoporosis Canada recommends that people aged 50 or over take vitamin D supplements of 800 to 1 000 IU a day. Higher doses of 1 000 IU a day may be required by the more elderly and by people with osteoporosis. The recommended total intake of calcium is 1 200 mg, including that derived from food sources (Papaioannou 2010, Hanley 2010).

Vitamin D alone can be an alternative for preventing falls among people who cannot tolerate calcium supplements. It is suggested that such people increase their calcium intake from dairy or calcium-enriched products to at least 500 mg a day. It is interesting to note that taking 10 000 units of vitamin D3 a week is a viable alternative for rationalizing the number of medications a person is prescribed, provided the person has a minimum calcium intake of 500 mg a day.

Certain active forms of vitamin D (calcitriol, alfacalcidol) can be considered for people with severe kidney disease. However, because of the hypercalcemia risks associated with these substances, follow-up in nephrology should be envisaged.

Osteoporosis Canada recommends that a person's vitamin D dosage be assessed after a 3- to 4-month period of taking the vitamin if the person is being treated for osteoporosis or is receiving over 2 000 units of vitamin D a day. Special attention must also be paid to the following groups:

- people with a glomerular filtration rate of less than 30 ml/min/1.73 m<sup>2</sup>;
- people taking thiazide diuretics;
- people taking active vitamin D (calcitriol or alfacalcidol);
- people with hyperparathyroidism.

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- encourage research on seniors with a diminished glomerular filtration rate, for the purpose of studying the occurrence of falls and fractures in relation to dosages and types of vitamin D, associated costs, side effects, impact on quality of life, etc. This research should lead to the formulation and dissemination of specific consensus-based recommendations in collaboration with the various specialists concerned (nephrologists, geriatricians, endocrinologists, etc.). Among other things, these recommendations should focus on:
  - the minimal assessment of metabolic abnormalities,
  - indications, dosages, and types of vitamin D and calcium,
  - specialty follow-up and referral mechanisms.

\* Glomerular filtration rate of less than 60 ml/min/1.73 m<sup>2</sup>.

## RECOMMENDATIONS MEDICATION REVIEW

### Considering:

- The high prevalence of medication use among seniors;
- The weak, but constant link between certain medications and the risk of falling, particularly medications that act on the central nervous system and the cardiovascular system;
- The undesirable effects of benzodiazepine use, particularly among the elderly;
- The fact that interventions to reduce the use of benzodiazepines are included in most studies on multifactorial interventions;
- The importance of medication review for fostering optimal medication use;

### and:

The effectiveness of medication review in preventing falls:

- Decrease of 27% (NNT : 13) in the number of fallers;  
⇒ Moderate quality evidence (⊕⊕⊕)

### THE COMMITTEE RECOMMENDS:

that physicians review medications (indications, side effects, compliance) in collaboration with pharmacists as part of periodic medical examinations in order to identify inappropriate prescriptions and possible interactions.

⇒ **Strong recommendation**

that physicians limit the prescription of benzodiazepines, discuss the possible negative effects of these medications with their clients, encourage them to reduce benzodiazepine use and assist them in this process.

⇒ **Strong recommendation**

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- Regarding medication review:
  - make up-to-date medication profiles available in seniors' medical and pharmaceutical files,
  - provide physicians and pharmacists with access to medication interaction software;
- implement effective means to encourage physicians and pharmacists to conduct medication reviews;
- make non-pharmacological procedures available to foster more appropriate use of medications: particularly pain management procedures (e.g. physiotherapy and locomotor system infiltration) and benzodiazepine withdrawal programs;
- inform seniors of the characteristics of normal sleep among older adults, non-pharmacological techniques for improving sleep and the negative effects of benzodiazepines.

**RECOMMENDATIONS  
PACEMAKER IMPLANTATION  
for people with carotid sinus hypersensitivity**

**Considering:**

The high prevalence of carotid sinus hypersensitivity as a cause of recurrent unexplained falls or falls with syncope (fainting);

**and:**

The effectiveness of pacemaker implants for preventing falls among people with carotid sinus hypersensitivity:

- Decrease of 69% in the number of falls;  
⇒ High quality evidence (⊕⊕⊕⊕)

**THE COMMITTEE RECOMMENDS:**

that physicians refer people suspected to have carotid sinus hypersensitivity to specialized services for assessment and treatment, particularly:

- people with syncope;
  - people with recurrent unexplained falls.
- ⇒ **Strong recommendation**

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

make physicians aware of:

- the prevalence of this condition;
- the low risk of using carotid sinus stimulation as a diagnostic manoeuvre under properly supervised conditions;
- the effectiveness of treatment (pacemaker implants) for preventing falls;
- the importance of acting quickly.



## RECOMMENDATIONS SLIP-ON TRACTION DEVICES

### Considering:

- The wintry conditions that occur in Québec several months of the year;
- The importance of promoting autonomy and physical activity throughout the year;
- The limits related to the small amount of data available: only one study with 109 participants;
- The limits related to the use of slip-on traction devices, particularly the fact they must be removed when a person goes indoors;

### and:

The effectiveness of slip-on traction devices\* for preventing falls outdoors in winter:

- Decrease of 58% (NNT : 3) in falls and 87% (NNT : 6) in falls with injuries;  
⇒ High quality evidence (⊕⊕⊕⊕)

### THE COMMITTEE SUGGESTS:

that physicians inform seniors about the effectiveness and limits of wearing slip-on traction devices on the soles of their boots in winter.

⇒ **Conditional recommendation**

Note: These devices must be worn only outdoors and be removed when a person goes indoors.

To promote the implementation of these recommendations, the committee believes that certain conditions related to resource availability, the conditions in which physicians practice, training or research should be put in place. In particular, steps should be taken to:

- encourage research aimed at:
  - assessing the real effectiveness of other traction devices on the market in preventing falls among seniors,
  - establishing criteria for identifying pedestrian areas that are used by seniors or people with mobility impairments and that should be given priority within municipalities when it comes to snow removal and the spreading of abrasives.

\* The only study on the effectiveness of slip-on traction devices for preventing falls concerns Yaktrax products. To our knowledge, no other brands have been studied.

## RECOMMENDATIONS FEAR OF FALLING

### Considering:

- The link between falls and fear of falling;
- The major repercussions of fear of falling, particularly reduced activity levels and the risk of physical deconditioning;
- The link between anxiety disorders, depression and fear of falling;
- The effectiveness of certain interventions (Tai Chi, physiotherapy) for reducing fear of falling;
- The validity and feasibility of using questions to determine whether a person is afraid of falling and has cut back on their activities as a result;

### and:

The uncertainty as to the effectiveness of interventions to reduce fear of falling on falls prevention;

### THE COMMITTEE SUGGESTS:

that physicians screen seniors for fear of falling, inform them and their family about the harmful effects of cutting back on activities because of this fear, and propose effective interventions.

⇒ **Expert recommendation**

that physicians be on the lookout for symptoms of anxiety or depression among people who are afraid of falling, and take appropriate action.

⇒ **Expert recommendation**

## RECOMMENDATIONS ORTHOSTATIC HYPOTENSION

### Considering:

- The prevalence of orthostatic hypotension among seniors;
- The link between orthostatic hypotension (symptomatic or not) and falls;
- The effectiveness of interventions to reduce orthostatic hypotension;

### and:

- The uncertainty as to the effectiveness of interventions to reduce orthostatic hypotension for preventing falls;
- The fact that screening for orthostatic hypotension followed by interventions is included in most multifactorial studies shown to be effective;

### THE COMMITTEE SUGGESTS:

that physicians screen for orthostatic hypotension and propose appropriate interventions for people who are most at risk, particularly:

- people who fall or are at risk of falling;
- people who take hypotensors;
- people who have diabetes.

⇒ **Expert recommendation**

Note: The recommended screening procedure is to take a person's blood pressure after the person has been lying down for 5 minutes and then to take it again after the person has been standing for 1 minute and 3 minutes.

## RECOMMENDATIONS COGNITIVE IMPAIRMENT

### Considering:

- The link between cognitive impairment and falling;
- The need to adapt the way in which falls prevention interventions are applied, when dealing with people with cognitive impairment;
- The effectiveness of certain dementia treatments;

### and:

The uncertainty as to the effectiveness of interventions aimed at stabilizing or reducing cognitive impairment in order to prevent falls;

### THE COMMITTEE SUGGESTS:

that physicians be on the lookout for cognitive impairment among seniors in order to:

- tailor the application of falls prevention interventions to the needs of people with cognitive impairment;
- assess and propose appropriate interventions based on the recommendations of the 3rd Canadian Consensus Conference on the Diagnosis and Treatment of Dementia.

⇒ **Expert recommendation**

<http://www.cmaj.ca/cgi/content/full/179/10/1019/DC>,  
<http://www.cmaj.ca/cgi/reprint/178/7/825>

## RECOMMENDATIONS URINARY INCONTINENCE AND NOCTURIA

### Considering:

- The link between urinary incontinence, falls, and falls with fractures;
- The link between nocturia, falls, and falls with fractures;
- The effectiveness of certain non-pharmacological and pharmacological interventions for urinary incontinence and nocturia;
- The feasibility of using the incontinence questionnaire and the voiding diary for detecting urinary incontinence or nocturia;
- The major repercussions of urinary incontinence on health and social functioning;
- The major repercussions of nocturia on sleep and quality of life;

### and:

The uncertainty as to the effectiveness of interventions aimed at reducing urinary incontinence and nocturia in order to prevent falls;

### THE COMMITTEE SUGGESTS:

that physicians screen for urinary incontinence and nocturia to identify the causes and that they propose interventions, particularly non-pharmacological approaches, to seniors.

⇒ **Expert recommendation**

## RECOMMENDATIONS ALCOHOL CONSUMPTION

### Considering:

- The link between alcohol consumption, falls and injury;
- The effectiveness of brief motivational interventions for reducing alcohol consumption among seniors;
- The validity and feasibility of using the AUDIT and CAGE tests for identifying at-risk alcohol consumption (AUDIT) or abusive alcohol consumption (AUDIT and CAGE);
- The major repercussions of at-risk or abusive alcohol consumption on the health of older adults;
- The recommendation of the American Geriatrics Society (2003) to screen for alcohol consumption among people aged 65 or over, because of decreased tolerance and volume of distribution and increased drug interactions;

### and:

The uncertainty as to the effectiveness of interventions aimed at reducing alcohol consumption in order to prevent falls;

### THE COMMITTEE SUGGESTS:

that physicians check seniors' alcohol consumption annually using the AUDIT or CAGE test in order to identify at-risk or abusive alcohol consumption and ensure that seniors who engage in this type of consumption are assessed and treated, where applicable.

⇒ **Expert recommendation**

## RECOMMENDATIONS DEPRESSION

### Considering:

- The link between symptoms of depression and falls;
- The effectiveness of different types of intervention for treating major depressive disorder;
- The validity and feasibility of using the five-item Geriatric Depression Scale to screen for symptoms of depression;
- The major repercussions of depressive symptoms on seniors' overall health;

### and:

The uncertainty as to the effectiveness of treating depression in order to prevent falls;

### THE COMMITTEE SUGGESTS:

that physicians do periodic screening for depression among people who fall. When a person tests positive for depression, the assessment process should be continued so that psychological or drug treatment can be proposed.

⇒ **Expert recommendation**

## **RECOMMENDATIONS FOOT PATHOLOGY AND QUALITY OF FOOTWEAR**

### **Considering:**

- The link between sore feet and falls;
- The effectiveness of various pain relief interventions;
- The major repercussions of pain on quality of life, mobility and functional autonomy;
- The decrease, in cohort studies, of the risk of falling among women who take analgesics for sore feet compared to women who do not take such medication;
- The link between walking around in bare feet or socks and the increased risk of falling;
- The link between wearing high heels or shoes with a limited area of contact between their soles and the ground and increased risk of falling;
- The possible effectiveness of advising seniors to wear appropriate footwear and the lack of negative effects associated with this recommendation;

### **and:**

- The uncertainty as to the effectiveness of interventions on the above-mentioned factors for preventing falls;
- The fact that screening for foot problems followed by interventions is included in certain multifactorial studies shown to be effective;

### **THE COMMITTEE SUGGESTS:**

that physicians explore clients' fall history during foot examinations and check for soreness and deformities that might be assessed in order to suggest appropriate interventions.

⇒ **Expert recommendation**

that physicians inform seniors about the importance of wearing appropriate footwear to prevent falls.

⇒ **Expert recommendation**



## RECOMMENDATIONS UNDERNUTRITION

### Considering:

- The prevalence of nutritional deficiencies among the elderly;
- The link between nutritional deficiencies, falls, and falls with fractures;
- The importance of nutritional status in the maintenance of muscle mass;
- The major repercussions of nutritional deficiencies on health and functional autonomy;
- The effectiveness of individualized interventions on nutritional deficiencies;

### and:

The uncertainty as to the effectiveness of nutrition interventions for preventing falls;

### THE COMMITTEE SUGGESTS:

that physicians monitor undernutrition indicators (particularly weight loss) during periodic visits with their clients, for assessment and treatment purposes, where applicable.

⇒ **Expert recommendation**



**APPENDIX 2**

**CHECKLIST**



## Falls prevention checklist

### Universal interventions for people aged 65 or over

#### Exercises

- Recommend that they do muscle strengthening and balance exercises;
- Recommend that they do Tai Chi.

#### Is their vision optimal?

- Check whether they have seen an optometrist or an ophthalmologist in the past two years;
- If they have cataracts, recommend that they have them removed;
- Refer people with major visual impairments for an assessment of their home environment.

#### Are they taking enough vitamin D and calcium?

- Check whether they take the following on a daily basis:
  - ✓ one 800-IU to 1 000-IU supplement of vitamin D<sub>3</sub>;
  - ✓ 1 200 mg of calcium (including dietary intake).

#### Is their medication appropriate?

- Review their medications: indications, compliance and side effects;
- Encourage them to reduce their use of benzodiazepines, by informing them of the risks associated with this type of medication and of the characteristics of normal sleep.

#### What is their risk of fractures?

- Check to see if they have a history of fragility fractures that indicates a high risk of fractures (20%) over 10 years;
- Check their risk of fractures ([www.osteoporosecanada.ca/](http://www.osteoporosecanada.ca/)).

#### Is their nutritional status good?

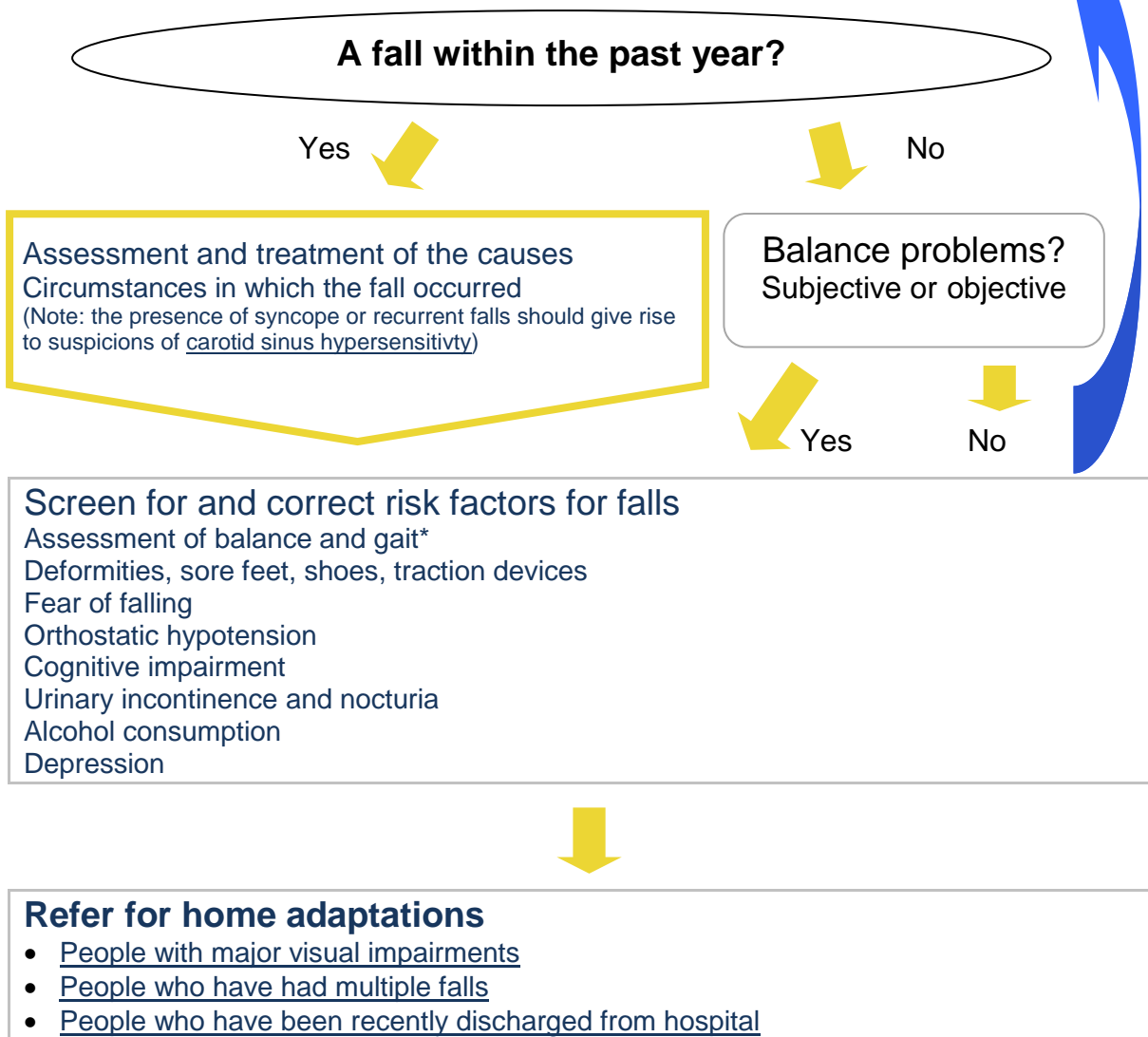
- Check to see if they show signs of malnutrition: weight loss, etc.;
- Check whether they can obtain healthy food and make meals.

The underlined interventions are highly recommended, i.e. the scientific committee is confident that the benefits of these interventions for seniors outweigh their undesirable effects. The other interventions have been suggested by experts or are conditional, i.e. the scientific committee believes that the benefits of these interventions for seniors outweigh their undesirable effects, but with a lesser degree of confidence than in the case of the underlined interventions.

## Falls prevention checklist

For people aged 65 or over

Universal interventions (see over)



\* An individualized physiotherapy assessment may sometimes be appropriate for developing an individualized intervention plan and gait adjustment assistance.

The underlined interventions are highly recommended, i.e. the scientific committee is confident that the benefits of these interventions for seniors outweigh their undesirable effects. The other interventions have been suggested by experts or are conditional, i.e. the scientific committee believes that the benefits of these interventions for seniors outweigh their undesirable effects, but with a lesser degree of confidence than in the case of the underlined interventions.









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