Falls: Risks and Prevention in Short-Term and Long-Term Care

Part 2: Accidents

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Even though studies show that they are avoidable 50% of the time, accidents and nosocomial diseases remain among the greatest hospitalization risks. Even more disturbing is the human and financial toll of these accidents and incidents. No specific numbers are available in Québec; however, U.S., U.K. and Australian statistics show that accidents cost an astounding amount of money, approximately 2% of health care expenditures according to one American study. There is no reason to believe that the situation is different in Quebec.[1]

Unfortunately, and in spite of the *Act Respecting Access to Documents Held by Public Bodies and the Protection of Personal Information* (R.S.Q., c. A-2.1), the *Act to amend the Act respecting health services and social services as regards the safe provision of health services and social services* (Bill 113) amends section 183.4 and stipulates that "the records and minutes of a risk and quality management committee are confidential." As a result, little information is available on accident rates and the costs of accidents suffered in Quebec hospitals and health care institutions.[2]

1. Functions of the Risk and Quality Management Committee

Section 183.2. The functions of the committee include seeking, developing and promoting ways to:

- **(1) identify and analyze incident or accident risks to ensure the safety of users;**
- **(2) make sure that support is provided to the victim and the close relatives of the victim;**
- **(3) establish a monitoring system including the creation of a local register of incidents and accidents for the purpose of analyzing the causes of incidents and accidents, and recommend to the board of directors of the institution measures to prevent such incidents and accidents from recurring and any appropriate control measures.**

http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2002C71A.PDF

The 2001 Francoeur Report highlights the avoidable nature of accidents. It even recommends implementing a culture of prevention.[3] It

[1] Nathalie de Marcellis-Warin. La gestion des risques dans les établissements de soins au Québec : une réglementation à la hauteur des enjeux. *Institut Européen de Cyndiniques* 40, 2003. Retrieved Nov. 20, 2009, from: http://imdr.eu/v2/extranet/iec-lettre40-noso.htm

[2] National Assembly. Bill 113 (2002, chapter 71) An Act to amend the Act respecting health services and social services as regards the safe provision of health services and social services. Retrieved Nov. 20, 2009, from http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2002C71A.PDF

[3] Rapport Francoeur (2001). La gestion des risques une priorité pour le réseau.

should be clarified beforehand that what the report considers to be an "accident" is in fact broad in scope and encompasses any avoidable event which hinders the recovery of the patient, lumping together nosocomial diseases, iatrogenic errors, and what we commonly refer to as accidents. In this article, only accidental traumas caused by falls are referred to as accidents.

In response to concerns about health care safety, Bill 113 was adopted on December 19, 2002. The bill highlights the urgent necessity for the provision of safe health services and social services in Quebec.[4] Institutions are now obligated to implement a local risk management committee and a local register of incidents and accidents to prevent their re-occurrence. In addition, section 8 of the *Act Respecting Health Services and Social Services* (R.S.Q., c. S-4.2) has also been amended. This section now states that "The user is also entitled to be informed, as soon as possible, of any accident having occurred during the provision of services that has actual or potential consequences for the user's state of health or welfare and of the measures taken to correct the consequences suffered, if any, or to prevent such an accident from recurring."[5] Our interest here is in the consequences of these accidents.

The safety policy outlined is a major component of the provision of quality care which has been pursued in Quebec for many years. In 2001, Jacques Rhéaume argued that pursuing a policy of quality in health care is guiding the system towards a new paradigm – that of ***adopting the point of view of the user***.[6] This statement is significant because it implies the implementation of preventive measures, methods and mechanisms to ensure the provision of safe care to the said *user*. Following the adoption of Bill 113, a nurse is now obligated to fill out an accident and incidents report when a patient suffers a fall during the provision of care.[7] Figure 1 outlines the role of the local risk and quality management committee.

Definitions

The Francoeur Report, the precursor of Bill 113, uses the term "accident with undesirable effects [our translation]" to define any severe impediment to the recovery of a patient. Accidents and incidents are considered within this light. An "'***incident***' means an action or situation that does not have consequences for the state of health or welfare of a user, a personnel member, a professional involved or a third person, but the outcome of which is unusual and could have had consequences under different circumstances."[8] An ***accident*** is

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Ministère de la Santé et des services sociaux (2001). D'abord, ne pas nuire… Les infections nosocomiales au Québec, un problème majeur de santé, une priorité. Rapport du comité d'examen sur la prévention et le contrôle des infections nosocomiales. Retrieved on Nov. 20, 2009, from http://publications.msss.gouv.qc.ca/acrobat/f/documentation/2005/05-209-01web.pdf

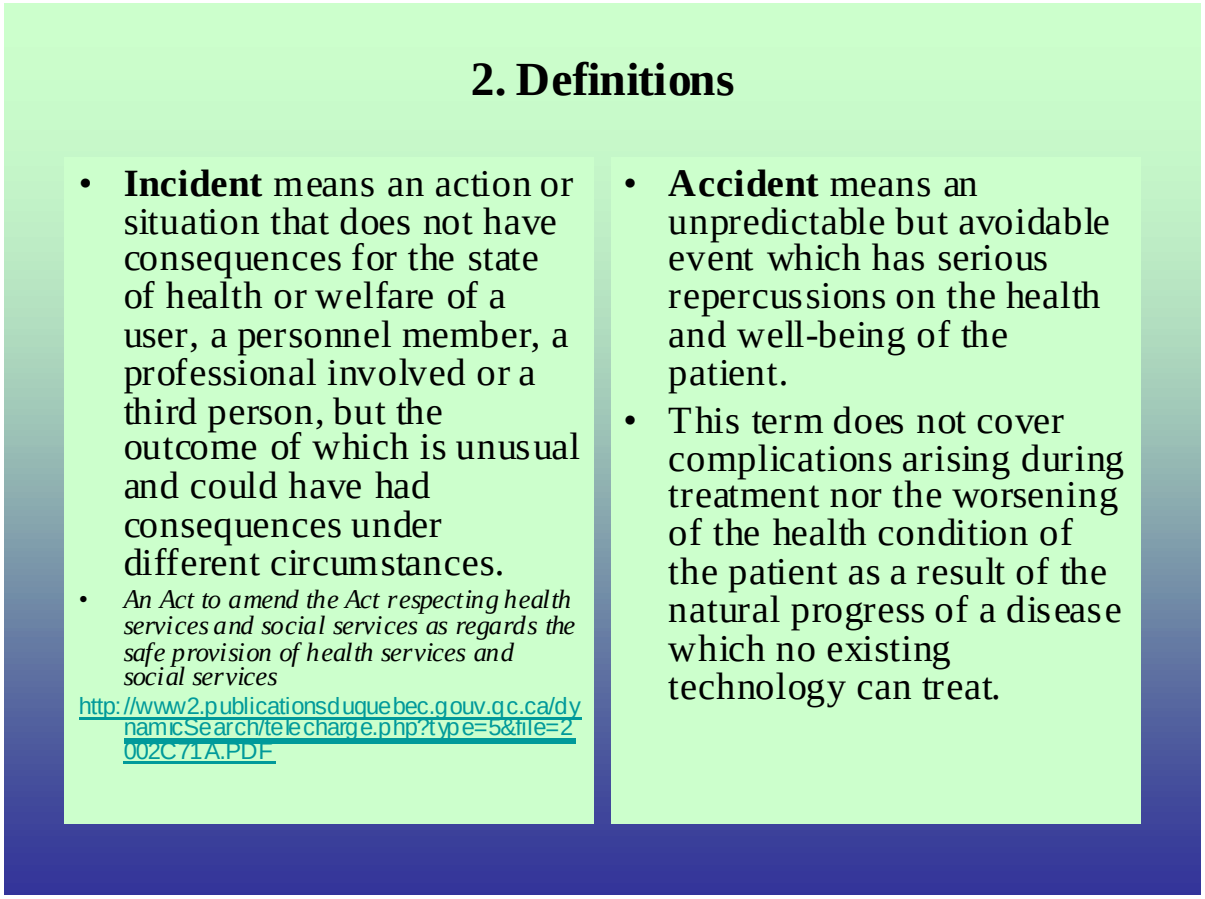
[4] National Assembly. Bill 113 (2002, chapter 71) An Act to amend the Act respecting health services and social services as regards the safe provision of health services and social services. Retrieved Nov. 20, 2009, from http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2002C71A.PDF

[5] Ibid

[6] François Rhéaume (2001). Les systèmes de gestion de la qualité des soins dans les hôpitaux du Québec. Retrieved Nov. 20, 2009, from http://www.scinf.umontreal.ca/Cours/SOI6230/Documents/Francois_et_Rheaume_2001.pdf

[7] Ministère de la Santé et des services sociaux (2001). D'abord, ne pas nuire… Les infections nosocomiales au Québec, un problème majeur de santé, une priorité. Rapport du comité d'examen sur la prévention et le contrôle des infections nosocomiales. Retrieved on Nov. 20, 2009, from http://publications.msss.gouv.qc.ca/acrobat/f/documentation/2005/05-209-01web.pdf

[8] National Assembly. Bill 113 (2002, chapter 71) An Act to amend the Act respecting health services and social services as regards the safe provision of health services and social services. Retrieved Nov. 20, 2009, from http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2002C71A.PDF



deemed much more serious. It can be defined as an unpredictable but avoidable event which has serious repercussions on the health and well-being of the patient. This term covers neither the complications arising during treatment nor the worsening of the health condition of the patient as a result of the natural progress of a disease which no existing technology can treat.[9]

Accident risk management

Just as with nosocomial diseases, the prevention of accidents requires the implementation of a control system. Being aware of client vulnerability leads to the enforcement of ***risk management*** concepts, also of the field of insurance services. In health care, risk management is preventive. It calls upon a wide range of methods to limit or eliminate risks and their undesirable outcomes.

In hospital, residential and long-term care centres, risk management is a complex task which requires interveners to be familiar with ministerial guidelines in prevention matters (Bill 113, Francoeur Report, etc.). It also requires sound knowledge of the health care environment, professions, work methods, clienteles, and equipment as well as weaknesses or vulnerabilities in order to identify potential risks of accident. It should be noted that the very nature of the health care facilities is often cited as an accident factor. Nurses and health care managers are well suited by their proximity to establish secure clinical areas to limit accidents in short-term care units and in the residential areas of long-term health care centres (CHSLD).

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[9] Ibid.

The underlying assumption of risk management is that many qualified staff members will work together to identify major risk factors, plan interventions, disseminate their findings to fellow interveners, prepare customized training sessions according to the professionals targeted, monitor the enforcement of the guidelines, issue reminders whenever necessary, conduct results assessments, and implement all required corrective measures.

A discussion of risk management is incomplete without referring to the patients and families who have been forced to deal with the effects of an avoidable accident. The attempts made to limit the consequences and costs of accidents also need to be addressed. The local risk and quality management committee addresses these issues.[10] *(Figures 3 and 4 outline the concept of risk management).*

3. Definition: Risk Management

. Risk is the probability of occurrence of a potential and more-or-less predictable hazard.

. Risk management is an insurance company concept which refers to a preventive approach which calls upon a variety of methods to limit or eliminate the materialization of risk and its potential outcomes.

Adapted from Michelle Dionne (2002, May 31). La qualité lieu de convergence. La sécurité du patient une question de qualité. Retrieved on Nov. 20, 2009, from http://www.fep.umontreal.ca/handicap/documentation/dionne112003AHQ.ppt#270, 20,Gestion des risques

Persons most likely to suffer an accident

All medicated, frail, and semi-conscious patients as well as those receiving treatment are at risk of falling. The most vulnerable group at risk of falling are seniors, in particular those suffering from cognitive impairment. This type of risk management should focus on emergency rooms, peri- and post-operative care, palliative care, pain management, walking assistance, rehabilitation, psychiatric care, suicidal patients, and any person who as a result of his or her age and physical or mental condition must be monitored or restrained.

4. Risk Management

Managing risks involves:

• Identifying potential risks in a health care facility.

• Preventing potential risks from materializing.

• Factoring in the impact of risks on patients, their families and on attending staff.

•Limiting outcomes when risks materialize.

Adapted from Michelle Dionne (2002, May 31). La qualité lieu de convergence. La sécurité du patient une question de qualité. Retrieved on Nov. 20, 2009, from http://www.fep.umontreal.ca/handicap/documentation/dionne112003AHQ.ppt#270,20,Gestion des risques

Elderly seniors are not the only ones at risk of falling

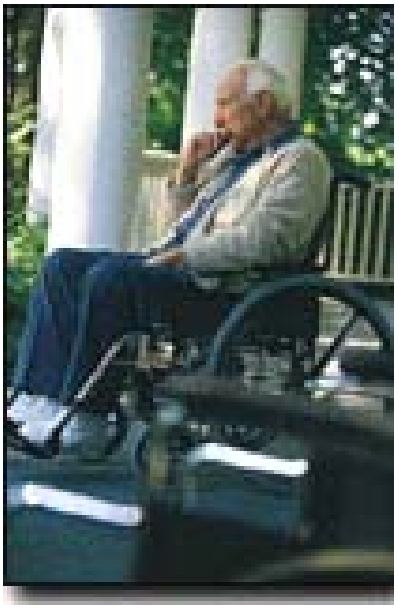
Each person experiences aging differently. The older a person is, the more likely he is to be frail and to experience blood circulation, neurological, joint, and neuromuscular problems which put him at risk of suffering an accident.

[10] Michelle Dionne (2002, May 31). La qualité lieu de convergence. La sécurité du patient une question de qualité. Retrieved Nov. 20, 2009, from http://www.fep.umontreal.ca/handicap/documentation/dionne112003AHQ.ppt#270,20

The equation is complex. Many younger persons also suffer from physical and psychological problems which are risk factors, whereas many seniors are alert and in excellent health.

Consequences of falls among seniors

Not only are seniors at greater risk of suffering falls, the outcome of such accidents are dire for this group. Beyond the immediate complications, a senior will take more time than a younger person to recover from a fall which results in contusions, bruises, dislocations, fractures or cranial trauma. As a further complication, a fall may end up altering the health condition of the senior permanently and markedly, in particular in the form of reduced mobility and autonomy impairment. A serious accident at an advanced age often marks the end of independence, and the beginning of social withdrawal and institutionalization – that is when it does not simply mark the end of life. A fractured neck of femur is often the beginning of both physical and psychological decline.



Courtesy of
http://www.pvad.net/index.html

The nature of risk

Falls are rightfully associated with walking; however, a person who is sitting may slide or fall out of weakness. Weak and suffering bed-ridden persons may fall when getting out of bed unassisted. Patients who are confused or agitated may fall after attempting to climb over the bed rails which were there to protect them in the first place. Many environmental, physical, mental or behavioural factors may make certain individuals prone to these types of accidents.

5. Definition: Fall

- **Is recognized as a fall the unintentional and sudden act of falling, sliding, pivotting, tripping or crashing of a person who is standing, sitting or lying down towards a surface which is lower than the one at the point of origin (i.e., stairs).**

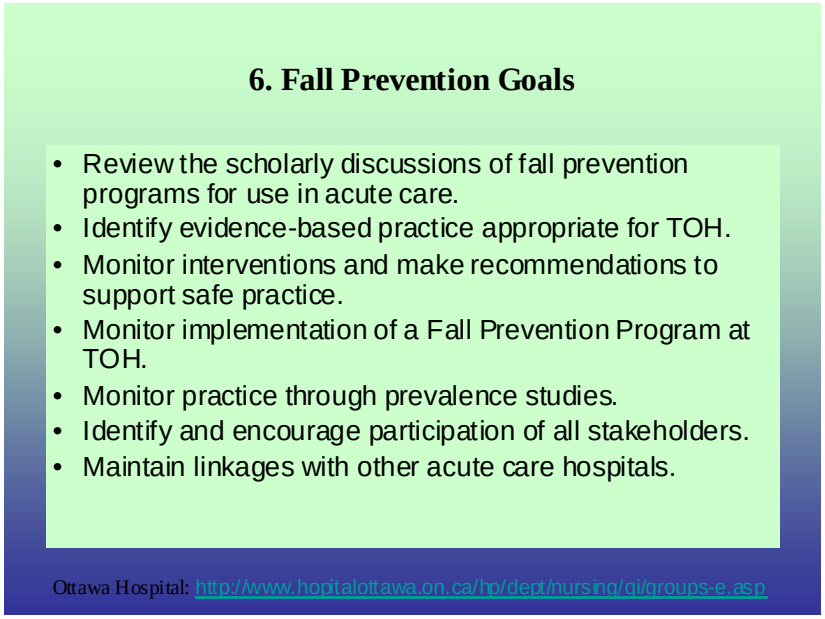
Incidence among seniors

In Quebec, numerous accidents are reported in the 65 and older age category. Accidents account for 2% of all hospitalizations. It is estimated that 1 in every 3 seniors has or will suffer a fall. Falls are a serious public health problem.[11] In this article, we focus only on accidents which occur in hospital, residential and long-term care centres (CHSLD) as well as in the homes of persons receiving nursing care. The burden on the patients and their families, the

[11] Yvonne Robitaille and Jean Gratton (2005) Les chutes chez les adultes âgés : vers une surveillance plus fine des données d'hospitalisation. Insitut national de santé publique. Retrieved Nov. 20, 2009, from http://www.inspq.qc.ca/pdf/publications/414-ChutesAdultesAgesHospitalisation.pdf

outcome on the capacity to administer care to other patients, the increase in hospital stays, and the financial toll of falls is extremely high. Falls deserve to be monitored even further and measures need to be implemented to identify persons at risk.[12]

Federal statistics indicate that in Canada "health care costs related to falls are $2.8 billion - almost half of these costs are for seniors who will fall."[13] Falls are the leading cause of injury among seniors. "Falls cause more than 90% of all hip fractures, and 80% of those who survive a hip fracture lose the ability to perform at least some activities of everyday living." "Eighty per cent of seniors do not go out in the winter. They are afraid of falling on ice… Winter is too long and older persons have to close themselves inside because they are so much afraid of falling."[14]. [15]



Consequences of falls on seniors

Falling may be a painful experience for people of a certain age. It may require some time to recover from the injuries sustained. Even if a person recovers, he may remain apprehensive and lack confidence in his abilities to stand up and walk freely. The outcome is sedentariness and the accompanying diminished functional abilities, constipation, loss of calcium, loss of appetite, digestive problems, risk of developing bedsores and psychosocial disorders. It has been observed that approximately 40% of admissions in retirement homes are the consequence of falls. They are also a major cause of injury-related death. Twenty percent of seniors who suffer a hip fracture die within a year. These disturbing statistics are justification for quality management committees to put an emphasis on prevention and achievable goals.

Fall prevention

Fall prevention may be viewed from a perspective of ***primary prevention*** (i.e., in the absence of a real fall). Primary prevention focuses on the immediate environment of the patient. The risk factors are corrected and the patient's muscular system and balance are reinforced, "just in case."

[12] Sally Lockhart (2001, March). Environmental Scan of Seniors' and Veterans' Falls-prevention Activity. Retrieved Nov. 20, 2009, from http://www.phac-aspc.gc.ca/canada/regions/atlantic/pdf/Environ_Scan_March_2001.pdf

[13] Active Independent Aging (2004). Facts about falls. Retrieved Nov. 20, 2009, from http://www.falls-chutes.com/guide/english/falls/falls2.html

[14] Active Independent Aging (2004). Facts about falls. Retrieved Nov. 20, 2009, from http://www.falls-chutes.com/guide/english/falls/falls2.html

Fall prevention can also be managed from a ***secondary prevention*** perspective when there is a moderate risk of falling (i.e., a frail, elderly person who has just undergone a serious intervention and who is recovering from a stroke). ***Tertiary prevention*** should be enforced when the condition of the patient has deteriorated, when he has lost walking autonomy or muscular force, when he is balance impaired or when he falls repeatedly.[16]

Regardless of the perspective, falls among elderly clients are both a serious personal and socio-sanitary problem which requires the implementation of a well-articulated prevention program. The risk and quality management committee must provide nurses with clear objectives , assessment outcomes and progress reports. Figure 6 provides an example of general objectives from the Ottawa Hospital fall prevention program.[17] *(Figure 7 indicates personal and environmental risk factors).*

7. Risk Factors

Individual Factors

- Age: 75 and older.
- Reduced mobility, walking problems, unstable balance.
- History of falls.
- Physical or mental pathologies: dizziness, anemia, Parkinson's disease, urinary incontinence, urgency, confusion, dementia, depression, agitation, stroke, dyspnea.
- Locomotive handicaps and neuromuscular disorders: arthritis, osteoporosis, frailty, pain, paralysis or stiffness of the lower limbs, knees, hips or ankles.
- Arm strength, reduced hand grasp (to support oneself).
- Diminished eyesight.
- Medications: analgesics, psychotropic sedatives, hypotensors.
- Distracted behaviour.
- Alcohol or drug consumption.

Environmental Factors

- Walking aids: cane, walker, crutches.
- Unsuitable bed, couch or wheelchair (e.g., without arms or rails, too soft, too low, too high)
- Ground obstacles in the room or environment (e.g., small carpets, slippery floors).
- Poor lighting.
- Unsupervised use of restraints, retention belts or bedrails from which a person may attempt to free himself.
- Bathrooms without an armrest and hallways and stairs without a rail.
- Lack of a hospital bell.
- Unsuitable footware.

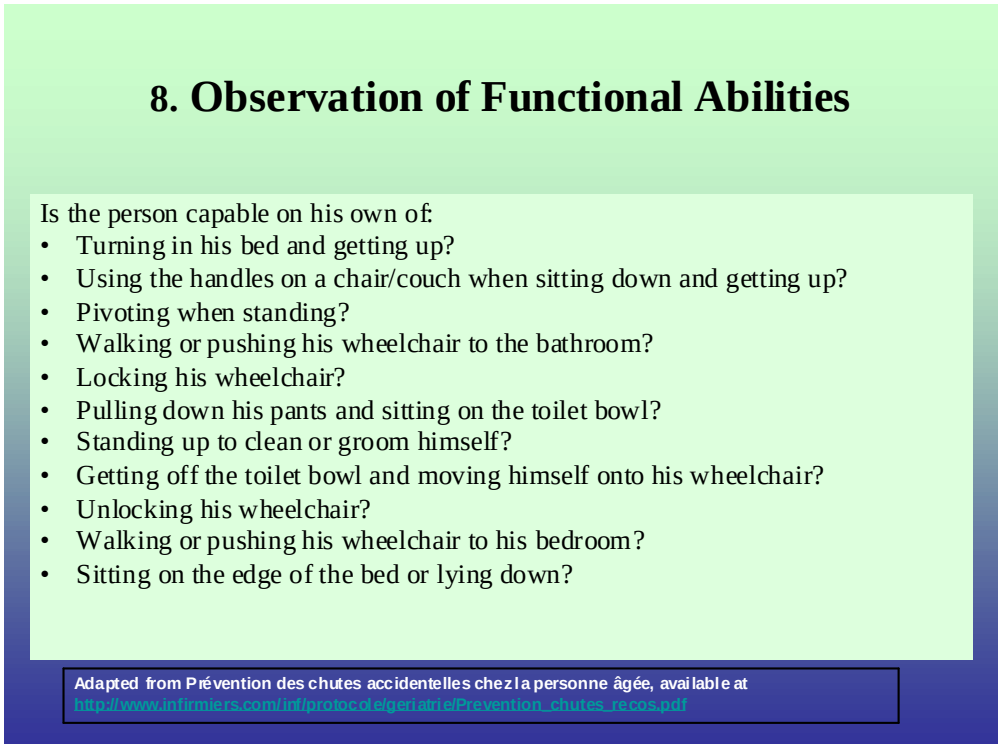
The objectives should focus on:

- Identifying personal and environmental risk factors;
- Identifying persons who are at risk;
- Performing a risk assessment of persons at both the physical and psychological levels;
- Enforcing preventive measures: appropriate nutrition, reviewing prescriptions with the physician, availability of walking aids (cane, walker, wheelchair, orthosis);

[16] Société Scientifique de Médecine Générale (2000). Recommandations de bonne pratique. **Prévention des chutes chez les personnes âgées**. Retrieved on Nov. 20, 2009, from http://www.ssmg.be/docs/rbp/textes/chutes.pdf

[17] Ottawa Hospital. Fall Prevention Sub-Group. Retrieved Nov. 20, 2009, from http://www.hopitalottawa.on.ca/hp/dept/nursing/qi/groups-e.asp

- Enforcing safety measures: bedrails, walking belt, hoist, hip cushions, restraints (only if absolutely necessary);
- Planning a patient education program so that he is aware how he is to be raised and moved safely;
- Educating the patient on how to exercise in a manner which reinforces his muscles and balance.



(Figure 8 provides an observation checklist to assess the functional abilities of the patient).[18]

Assessing the functional abilities of the patient

Many accidents occur when going to bed, when getting up and when going to

the bathroom, in particular if moving from the bed to a wheelchair is required. Observation is used to assess the functional abilities of the client in order to identify potential risks and to ensure his safety.

The client may be asked some of the questions outlined in figure 9. Depending on his answers, certain conditions will need to be improved in order to allow him to maintain as much autonomy as possible. For example, the mattress may be lowered and a chair may be installed in the hallway or mid-way between the bedroom and bathroom so that the client can rest. If the facilities cannot be improved, one must supplement the lack of autonomous action.

[18]Margot Phaneuf (2007). *Le vieillissement perturbé. La maladie d'Alzheimer*. Montreal: Chenelière-Éducation.

Identifying adjuvant factors

Risk factors exist in every facility: in the patient's room, in the bathroom, in the hallway and in the stairwell. These factors must be identified and rectified. Caregiver behaviour and the machines which caregivers use also constitute risk factors.

9. Questions to Ask the Patient When Performing a Falls Assessment

- Do you have trouble getting up from your chair?
- Do you suffer from imbalance?
- Do you seek support when moving?
- Are you afraid of falling?
- Are you afraid to pick up an object on the floor?
- Are you afraid to go outdoors and do you avoid going outdoors?
- Is walking painful?
- Do you suffer from dizziness or vertigo when getting up from bed?
- Do you suffer from dizziness or vertigo when changing directions?
- Do you have trouble seeing obstacles?
- Do you complain that it is dark when there is sufficient lighting?
- Do you wear glasses?
- Have you ever suffered a loss of appetite?
- Do you skip preparing meals?
- Do you consume more than four medications every day?
- Do you consume medications which act like a sedative (sleeping pills, tranquilizers, sedatives or antidepressants) or which lower your blood pressure (diuretics, hypotensors)?
- Do you consume alocohol?
- Are you suffering an episode of depression? An acute episode (fever, urinary tract infection, etc.)?
- Has your ability to conduct a normal activity been diminished?

It is essential that caregivers be aware of the movements of the patient and of his perceived ability to move. Many factors come into play in falls and in limiting one's movements, among them: fear of falling, poor sight, debilitating health problems, slower reflexes and individual behaviour. Some people suffer repeated falls. The exact cause which makes these people accident prone is unknown, but the result is referred to as *drop attacks*.

The most common fractures are those of the hip, wrist and waist.

Risk assessment of vulnerable persons

Risk factors need to be identified in the environment and habits of the individual. It is also necessary to assess the level of risk in order to proceed with the appropriate interventions.[19] Such an assessment is extremely relevant for seniors suffering from neurological, joint and blood

A risk assessment should be conducted not just upon admission, but also at regular intervals, according to the condition of the patient.

[19] Société française de documentation et de recherche en médecine générale (2005, November). Prévention des chutes accidentelles chez la personne âgée. Argumentaire. Retrieved on Nov. 20, 2009, from http://www.has-sante.fr/portail/upload/docs/application/pdf/prevention_des_chutes_-_argumentaire.pdf.pdf

circulation problems. The assessment should be conducted as soon as the patient gets up following major surgery, in particular after hip, knee or foot interventions or a stroke.

Patients suffering from diabetes, anaemia, and low-blood pressure as well as individuals who are taking medications which may cause weakness, dizziness or vertigo should be assessed. Screening must be conducted according to the age and gender of the patient. Caucasian women of low-weight are at greater risk of falling. Other factors besides age, such as pathologies and addictions, must be taken into consideration.[20]

Means and methods

Many scales can be used to assess the mobile abilities of individuals with or without walking aids. What matters most is not the method, but assessing the patient. The nurse should note the results in the therapeutic nursing plan and give guidelines to fellow team members. The test shown in figure 10 is used to assess and measure the abilities of the client with precision.[21]

10 - Tests to Identify Persons at Risk of Falling

Questions	Standard
Could you please stand up and walk? (1 to 2 minutes chronometered; repeat test 3 times successively).	The patient must get up from a chair and walk about 3 metres, turn around, walk back to the chair and sit down unassisted, with or without a cane. A transportation disability begins after 20 seconds. It is significant if it lasts more than 29 seconds.
Can you hold your balance on one leg?	Abnormal if the senior does not manage to stand on one leg for at least 5 seconds.
Sternal push	Imbalance upon sternal push indicates a risk of falling. Compare with sensation of imbalance, eyes open or closed.
What do you think about…?	Frail elderly persons stop walking when their attention is required for other tasks such as thinking to answer a question.

Falls history

Abilities assessment is important. It is also important to know if the client has a history of falling. A history of falls is revealing. Studies indicate that 50% of those who fall will fall again a short time later.

[20] Sizewise (2008). Understanding Fall Risk, Prevention, & Protection. Retrieved on Nov. 20, 2009, from http://www.sizewise.net/getattachment/2d5c6915-509c-4d99-a653-bef8bcc56fdc/SW-Fall-Risk-Toolkit.aspx John Dempsey Hospital, The University of Connecticut Health Center. *Clinical Protocol Nursing Practice Manual.* Retrieved on Nov. 20, 2009 http://nursing.uchc.edu/nursing_standards/docs/Falls%20-%20Risk%20Identification,%20Prevention%20Management,%20and%20Treatment.pdf

[21] Société française de documentation et de recherche en médecine générale. Prévention des chutes accidentelles chez la personne âgée. Recommandations. Retrieved from http://www.infirmiers.com/inf/protocole/geriatrie/Prevention_chutes_recos.pdf

The nurse's role

The nurse plays a critical role in fall prevention. By preventing risk and implementing customized corrective measures, she touches many dimensions of patient care: environmental risks, personal risk assessments, prescription review, nutrition monitoring, muscle and balance reinforcement exercises, and interventions to control incontinence.

Other types of monitoring

The nurse may be more specific in her assessment and verify the patient's feet for conditions such as orthostatic hypotension. She may also evaluate the person's balance in space and time to identify an underlying pathology. Falls are often an indicator of the health condition of seniors. Among diabetics, neuropathies or glycemia can cause falls. Nurses must also have mental test results at hand (i.e., Folstein) and anticipate preventive measures. Patients suffering from Alzheimer's -type dementia are twice as likely to fall as other patients. The nurse may also consult postural and equilibrium tests conducted by a physician or by a physiotherapist. If the nurse is sufficiently qualified, she may conduct these tests. *(Figure 11 provides an example which is easy to apply).*[22]

11. Study of Gait and Posture	
Sitting down	( ) The person is stable ( ) The person is sliding ( ) The person is falling sideways
Getting up from a chair	( ) The person is autonomous ( ) The person needs asistance ( ) The person uses a walker
When getting up	( ) The person shows no sign of imbalance ( ) The person vacillates ( ) The person must grab onto an object
Standing up	( ) The person walks with assurance in large strides ( ) The person walks in hesitant strides ( ) The person can resist a slight imbalance ( ) The person falls at the slightest loss of balance ( ) The person maintains balance when eyes are shut for 5 seconds ( ) The person loses balance when eyes are shut for 5 seconds ( ) The person can pivot 360 degrees while walking forward ( ) The person can pivot 360 degrees in small, incremental steps
When walking	( ) The person looks forward ( ) The person looks at the floor
When sitting down	( ) The person has a grasp of distance and masters the act of sitting down ( ) The person miscalculates distance and lets himself fall into the chair

Medication surveillance

The nurse must verify the patient's prescriptions. Seniors are often prescribed many medications at the same time. It is sometimes necessary to ask the physician to reduce the number of prescriptions to improve the mobility of patients who are at risk of falling. Some medications are more likely to cause weakness and dizziness. Medications which affect the central nervous system, neuroleptics and opioid and non-opioid analgesics are often cited as

[22] Margot Phaneuf (2007). *Le vieillissement perturbé. La maladie d'Alzheimer*. Montreal: Chenelière-Éducation.

the cause of falls. In addition, to this list can be added hypotensors, diuretics and anti-inflammatories.

Some people may have been prescribed with more than one of these medications. The nurse must note these medications in the therapeutic nursing plan so that the staff is aware of the risk of falling and of the need to monitor the patient.[23]

If the prescription cannot be modified, the patient should be notified of potential side-effects and of the precautions which he should take. *(Figure 12 contains a non-exhaustive list of medications which are often associated with falls).*

12. Medications which Increase the Risk of Falling

Psychotropes and analgesics	Cardiovascular drugs
Psychotropes: tricyclic antidepressants and neuroleptics Sedatives and hypnotic drugs Benzodiazepines Opioid and non-opioid analgesics Non-steroidal anti-inflammatroy drugs (NSAID, aspirin	Diuretics Calcium blockers Nitrous derivative Type 1a antiarrythmic Digoxin

Société française de documentation et de recherche en médecine générale. ***Prévention des chutes accidentelles chez la personne âgée*** http://www.infirmiers.com/inf/protocole/geriatrie/Prevention_chutes_recos.pdf

Food and nutrition monitoring

Monitoring the food and nutrition of seniors is essential. Fatigue, weakness and disinterest in food may lead them to limit their food intake (e.g., to tea and biscuits). An insufficient intake and variety of nutritious foods may cause deficiencies in essential nutrients, in particular calcium and vitamin D. Nutritional imbalance may also cause osteoporosis and bone frailty. The nurse must supervise the food intake of the patient and educate him with a view to preventing falls.

13. Kegel Exercises

Step 1: Sit forward on your chair and place your feet and knees wide apart. Place your elbows on your knees and lean forward. Your pelvic floor should be touching the seat.

Step 2: Close your eyes and imagine stopping yourself from passing wind.

Step 3: Squeeze the muscles tightly around your back and front passages and lift your pelvic floor up and away from the chair.

Do not:

- bear down as during a contraction;
- use tummy, thigh or buttock muscles;
- hold your breath.

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"Treating Incontinence": http://www.phac-aspc.gc.ca/seniors-aines/publications/archive/public/age/info-exchange/incontinence/incontinence4-eng.php

Urinary incontinence

Urinary incontinence is a cause of falls, in particular urge incontinence, which forces seniors to rush to the bathroom. Seniors may

[23] Société française de documentation et de recherche en médecine générale. Prévention des chutes accidentelles chez la personne âgée. Argumentaire. Retrieved from http://www.has-sante.fr/portail/upload/docs/application/pdf/prevention_des_chutes_-_argumentaire.pdf.pdf

experience pain in the joints, in particular in the feet, and have trouble moving. Poorly calculated movements and imbalance increase the risk of falling. One nursing intervention is to suggest that the senior reinforce his sphincter muscles. The nurse may also suggest that the senior avoid consuming diuretics such as coffee, tea, soft drinks and sweetened beverages.[24]

14. Interventions Following a Fall

Rapidly assess the situation.

If the person appears to have suffered a severe injury, request immediate assistance and avoid moving him. If the person is not severely injured:

- **Take the person's vital signs and assess his neurological signs and injuries. Inform the physician whenever necessary.**
- **Kneel or sit beside the person, hold his hand to reassure him and allow him to rest for a few minutes while observing him.**
- **If the person is able to get up, help him do so and walk with him to his bed.**
- **Observe and monitor his behaviour, vital signs and neurological signs every six hours.**
- **When in doubt concerning a potential fracture, insert a sling under the member or a plate below his back before moving the fall victim.**
- **Complete the accidents and incidents report form.**
- **If the person has suffered a fall in his home and seems injured, call an ambulance.**

What to do when a senior falls

In spite of every preventive measure taken, including the assessment and monitoring of persons at risk, some seniors may nonetheless fall from a chair or bed. They might fall when walking, when climbing the stairs or when climbing over a bedrail or another protective device.

In many cases, the victim must be attended to promptly. First, kneel down or sit next to the person. Hold him in your arms and reassure him that you are there to help him. Before raising the victim, look around and examine the environment in which the fall has occurred.

Determine immediately whether the person is conscious or not. If he is, ask him how he feels and observe his apparent condition. Determine whether he is in great pain, little pain, extremely agitated or relatively calm. Assess whether a limb or a joint appears to be out of place. Determine from which height the fall occurred. Determine how the victim landed. Was

[24] Public Health Agency of Canada. Treating Incontinence. Retrieved on Nov. 20, 2009, from http://www.phac-aspc.gc.ca/seniors-aines/publications/archive/public/age/info-exchange/incontinence/incontinence4-eng.php

it on his head, on his buttocks, on his back or on his hands? *(Figure 18 provides a list of interventions to perform when a fall occurs).*

If the victim seems seriously injured, do not move him. Request immediate assistance! Following the first quick general examination, take the victim's vital and neurological signs. If the person is in great pain or if his vital signs indicate serious injury, a physician's intervention is required. If there appears to be severe trauma to a limb or to the spinal chord, it is preferable to request the assistance of other health care professionals so that they can install a sling or a plate to support the fractured limbs or back of the injured person before moving him to a bed.

If the person can get back on his feet, the nurse can provide support by raising the person from behind, under his armpits, and helping him walk to his bed or wheelchair. Even if no specific treatment is required after a fall, the vital parameters and neurological signs of the victim need to be monitored right after the fall and every six hours. The nurse must then duly fill out the accidents and incidents form. The details surrounding the fall and the measures taken as a result should also be recorded. [25]

Falls analysis

A fall should be considered a serious event. The cause of a fall should be determined and assessed to prevent future accidents. Studies on falls can reveal elements which can help us to ensure patient safety. Certain activities performed at specific hours during the day are more

15- **Circumstances of Falls**

- Before meals: Falls can indicate a drop in glycaemia levels. An early morning or mid-afternoon snack can be required.
- Between meals: Falls may be a sign of postprandial hypotension. The patient should sit down for a few minutes and be accompanied after his meals.
- When waking up: Standing up, patients may experience the same effects produced by certain medications. They should be quickly assessed before moving.
- After movements of the head: These may indicate a compressed carotid or vertebra which could inhibit cerebral circulation. A medical examination may be required.
- In the bathroom: Falls can indicate motor ability. The patient must receive adequate assistance to manage his clothes, sit down and clean himself.
- At the end of the day: Falls may be the result of fatigue. A mid-day or afternoon nap can be helpful.
- When accompanied by physical symptoms: The patient should undergo a complete medical examination when falls are accompanied by symptoms such as fever, coughing or hypertension (Rader, 1995).
- When the feet suddenly buckle and lose their tonus without inflicting sensory impairment: Falls are the result of vertebrobasilar insufficiency (VBI, also known as vertebral basilar ischemia).

[25] Margot Phaneuf (2007). *Le vieillissement perturbé. La maladie d'Alzheimer*. Montreal: Chenelière-Éducation.

likely to result in falls. Recognizing these activities provides valuable information on their role in falls.[26] Figure 15 highlights some of these activities.

Nursing guidelines and falls

With the advent of the Therapeutic Nursing Plan (TNP), a nurse must transmit patient fall prevention guidelines for vulnerable clients to her coworkers. The nurse is responsible for assessing the risk of falls, the severity of the fall and its assumed underlying causes. If individual monitoring or assistance is required, she must inform the nursing assistant and beneficiary attendant of the guidelines to be followed. It is the duty of the nurse to document the condition of her patients.
(Figure 16 shows the Morse Scale which is used to measure falls risk.[27]

Muscle and balance reinforcement exercises

With a view to primary prevention (before falls risk appears) and tertiary prevention (after the patient has suffered one or more falls), the nurse must educate the patient on how to prevent falls through exercises conducted to reinforce his lower and upper limb muscles, his buttocks, and his balance so that he can walk and raise objects in a safe manner. The front legs also need to be strengthened to facilitate the grip on walking devices or handrails in hallways, to stand up and to increase the ability to thrust oneself forward with the arms to get up.

16. Risk factor	Scale	Points	Patient's score
History of falls	Yes	25	
	No	0	
Secondary diagnosis	Yes, 2±(mention)	15	
	No	0	
Ambulatory aids (mention)	Furniture	30	
	Crutches/cane/walker, patient lift.	15	
	None/bedrest/ wheelchair/nurse	0	
Gait Transferring	Imapired	10	
	Weak	0	
	Normal/bedrest/immobile	20	
Mental status	Forgets limitations	15	
	Oriented to abilities	0	
	Total:		

Morse Scale : http://www.sizewise.net/getattachment/2d5c6915-509c-4d99-a653-bef8bcc56fdc/SW-Fall-Risk-Toolkit.aspx

High risk = 45±
Moderate = 25-44
Low = 0-24

Summary of the strategies to prevent falls and fractures
Breathing exercises are also practical. Dyspnea (shortness of breath) often hinders the efforts of seniors. Some persons may have a reduced cerebral circulation which hinders their balance.

[26] Public Health Agency of Canada. Treating Incontinence. Retrieved on Nov. 20, 2009, from http://www.phac-aspc.gc.ca/seniors-aines/publications/archive/public/age/info-exchange/incontinence/incontinence4-eng.php
[27] Société française de documentation et de recherche en médecine générale. Prévention des chutes accidentelles chez la personne âgée. Recommandations. Retrieved on Nov. 20, 2009 from http://www.infirmiers.com/inf/protocole/geriatrie/Prevention_chutes_recos.pdf

Many fall victims state that they lost their balance. Rotation and flexion exercises increase neck flexibility. Some exercises even reinforce the joints and the buttocks. Certain foot positions increase balance.[28] Please consult the exercises in the appendix.

Teaching the patient how to get up

Patient education is a valuable nursing tool when it comes to accidents, in particular falls and how to get up after falling.[29]

A patient can still suffer falls despite the preventive measures enforced. He may even be able to get back up on his feet without assistance or simply wait for staff to help him. It is therefore beneficial to teach a person who is at risk of falling and who is strong enough the correct, safe method to get back up.

Figure 17. Main Strategies to Prevent Falls and Fractures among the Elderly

Stages of Aging	Assessment	Individual Strategies	Common Strategies (at all stages)
Seniors in good health living at home	Eventual falls assessment and/or identification of risk factors (e.g., screening)	Encourage senior to exercise or perform activities Implement customized rehabilitation programs according to the needs of the senior	Correction of neuro-sensory impairments Podiatric care (footwear and care) Nutritional advice (prevention), correction of nutritional deficits whenever necessary (especially among dependent seniors) Preventive and/or curative measures for osteoporosis, including vitamin D supplementation, among persons confined to a residence or an institution Identification and correction of potential iatrogenic risk factors, providing relief whenever possible
Frail elderly person living at home or in an institution	Ibid + standardized geriatric psychiatric assessment MMS, ADL, IADL, nutritional status, balance and walking problems) + housing assessment	Intervention program according to results, in particular education on how to rise Refitting the home (setting up tele-alarm systems)	
Institutionalized dependent elderly persons	Ibid + multiple pathologies assessment	Case management of multiple pathologies, in particular Alzheimer's-type dementia Assessing potential use of restraints	

MMS: *Mini Mental Statement*; ADL: *Activities of Daily Living*; IADL: *Instrumental Activities of Daily Living*

[28] Société française de documentation et de recherche en médecine générale, 2005. Retrieved on Dec. 7, 2009 Recommandations pour la pratique clinique - ***Prévention des chutes accidentelles chez la personne âgée – Recommandations*** Novembre 2005, p.8.http://www.unaformec.org/publications/Prevention_chutes_recos.pdf

[29] Margot Phaneuf (2008). Teaching in Caregiving. Retrieved on Nov. 20, 2009, from http://www.infiressources.ca/fer/Depotdocument_anglais/Teaching_in_caregiving.pdf

18- How to Get Up From the Floor by Yourself

- Keep calm,
- Check your body.
- If you are injured, call for help. Stay warm.
- If you are not hurt, look for a sturdy piece of furniture, like a chair.

1) Roll onto your side.

2) Crawl over to a chair or sturdy furniture.

3) From a kneeling position, put your arms up on the seat of the chair.

4) Bring one knee forward and put that foot on the floor.

5) Push up with your arms and legs, pivot your bottom around.

6) Sit down. Rest before trying to move. [30]

[30]. Alberta Health Services. Take Action Prevent a fall. P.18 http://www.calgaryhealthregion.ca/programs/seniorshealth/pdf/ahs_edmonton_falls_booklet_for_seniors_final_2009.pdf

It should be mentioned to the patient that if he falls on his head or suffers from dizziness or pain in a limb or his back, it is better for him to wait for assistance before getting up. In such circumstances, the victim should call for help so that medical staff can be alerted.

Whether the person is capable or not of getting up changes nothing. The victim should be examined (see above) and have the following monitored: vital parameters, neurological signs, wound identification and response planning. The nurse must complete an accidents and incidents report form detailing the event.[31] *Figure 19 summarizes the most effective prevention programs).*

19. Most Effective Fall Prevention Programs

The most effective programs integrate the following elements:

- **Rehabilitation of muscular strength and support muscles;**
- **Walking and balance rehabilitation;**
- **Learning how to use ambulatory aids: canes, walkers, crutches, etc.;**
- **Educating on the safe lifting and transfer of patients;**
- **Refitting the environment appropriately (e.g., lower bed, use of bedrails, cushions on the floor, etc.);**
- **Correcting ocular problems;**
- **Adjusting drug prescriptions.**

http://www.infirmiers.com/inf/protocole/geriatrie/Prevention_chutes_recos.pdf

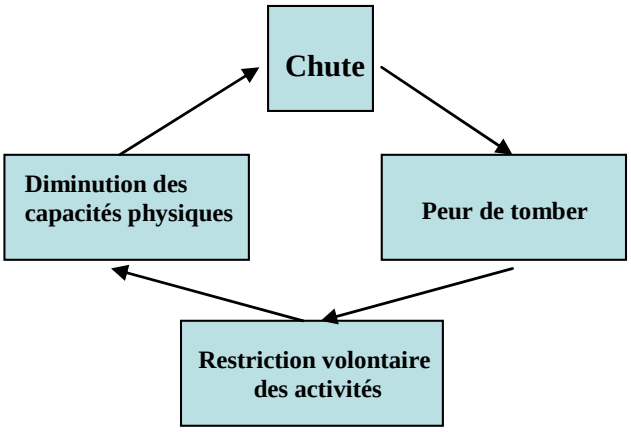
(A summary is presented in figure 17).[32]

Customized prevention

Prevention plays an important role in preventing falls in hospital centres. Here are a few measures to enforce depending on the age and condition of the person.

All of these preventive measures are effective and should be included in a properly structured program. They are necessary, even if some individuals continue to suffer falls, because they continue to prevent others. These methods prevent subsequent accidents and unspecified complications. In many cases, these preventive measures may thwart *post-fall syndrome*, which often results in the victim restricting his activities and in social withdrawal.[33]

Figure 20



Syndrome post-chute

[31] Government of Ontario. WhatTo Do If You Fall. Retrieved on Nov. 20, 2009, from http://www.culture.gov.on.ca/seniors/french/programs/seminars/falls/docs/FallTips.pdf

[32] Société française de documentation et de recherche en médecine générale. Prévention des chutes accidentelles chez la personne âgée. Argumentaire. Tableau 15, p. 38 Retrieved from http://www.has-sante.fr/portail/upload/docs/application/pdf/prevention_des_chutes_-_argumentaire.pdf.pdf

[33] Ibid. p. 23.

Conclusion

Falls are not random. Many factors may lead to falls among seniors. By identifying and eliminating potential sources, the nurse can play an unprecedented preventive role provided that she is aware of the causes and risk factors at hand for a heavily medicated, suffering, confused or physically unstable person. Through concerted action, observation and adherence to patient functional abilities assessments, care attendants are indispensable actors in fall prevention. After all, as the saying goes, an ounce of prevention is worth a pound of cure.

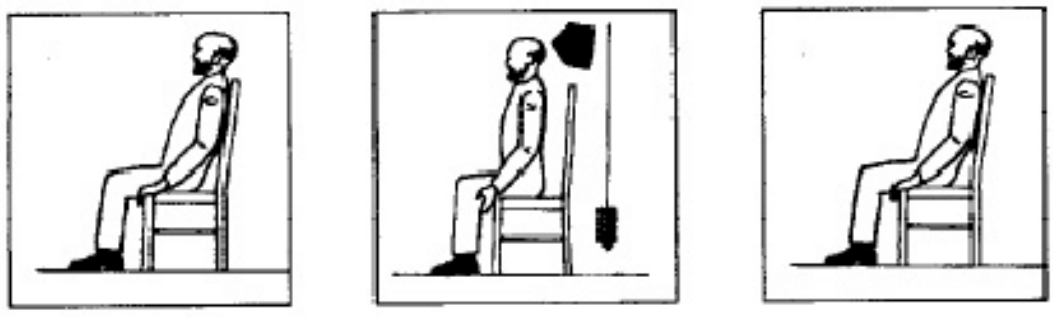
Appendix

A Few Practical Exercises [34].[35]

2. Muscle toning

EXERCISE 2.1 Sitting down, with the trunk bent backwards slightly, supported by the chair, and with the feet flat on the floor:

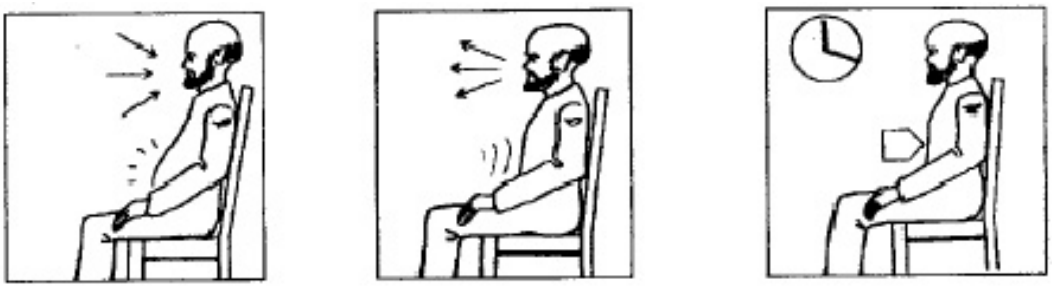
- Raise the trunk straight up and forward.
- Return to starting position on chair.



EXERCISE 2.2 Sitting down:

- Breathe in slowly, letting your abdomen swell and protrude.
- Breathe out slowly, pulling your abdomen in towards your back.
- Try to breathe out slowly for increasingly long periods of time (5 to 15 seconds).

Repeat 10 times.

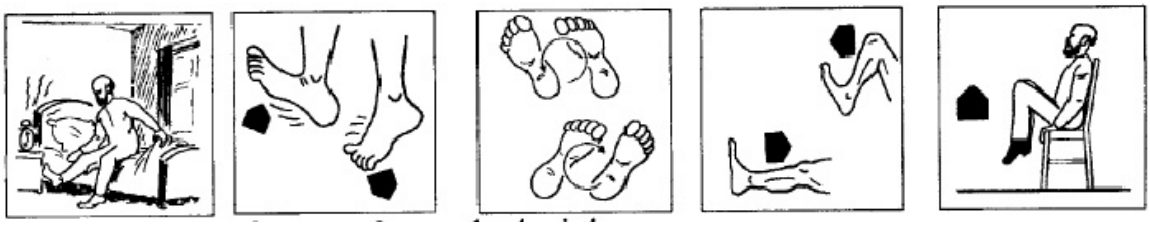


[34]. Société Scientifique de Médecine Générale. Recommandations de bonne pratique. ***Prévention des chutes chez les personnes âgées***. http://www.ssmg.be/docs/rbp/textes/chutes.pdf
http://www.ssmg.be/docs/rbp/textes/chutes.pdf

[35]. Société Scientifique de Médecine Générale Recommandations de bonne pratique. ***Prévention des chutes chez les personnes âgées :*** http://www.ssmg.be/docs/rbp/textes/chutes.pdf

EXERCISE 2.3 Ankle stretching in the morning, when waking up (or after sitting for a long period of time):

- Flex and extend ankles 20 times, slowly, covering full joint amplitude.
- Rotate ankles 20 times, slowly, covering full joint amplitude, first to the right, then to the left.
- Flex and extend knees 20 times, slowly, in full joint amplitude.
- Flex and extend hips 45 degrees 20 times slowly, sitting down, in full joint amplitude.

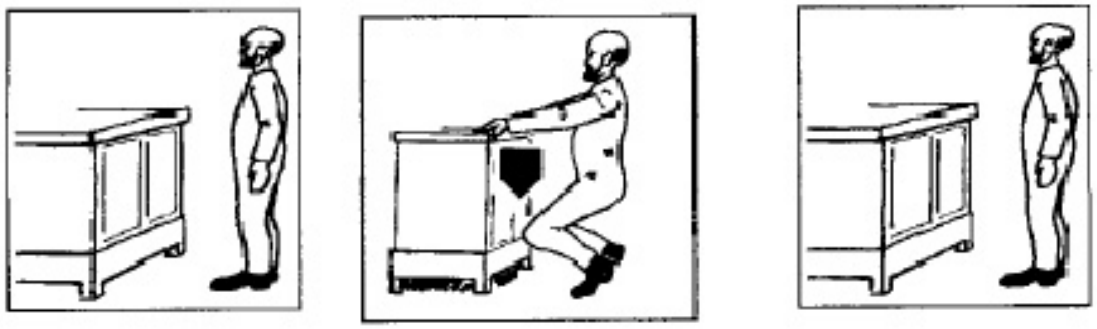


EXERCISE 2.4 Reinforcing foot muscles:

- Stand in front of a table or a piece of furniture.
- Stand on the tip of your toes (10 to 30 times).
- Stand on your heels (10 to 30 times).
- Combine both exercises (10 to 30 times

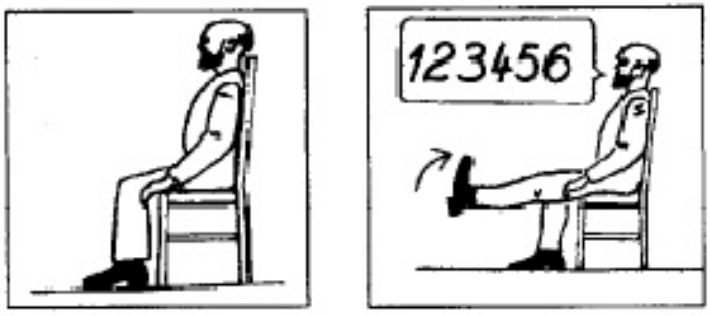
EXERCISE 2.5 Reinforcing your thigh muscles:

- Stand in front of a table or a piece of furniture.
- Bend your knees to a 45-degree angle.
- Straighten them.



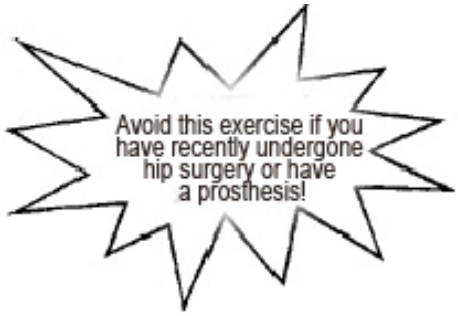
If this is too painful:

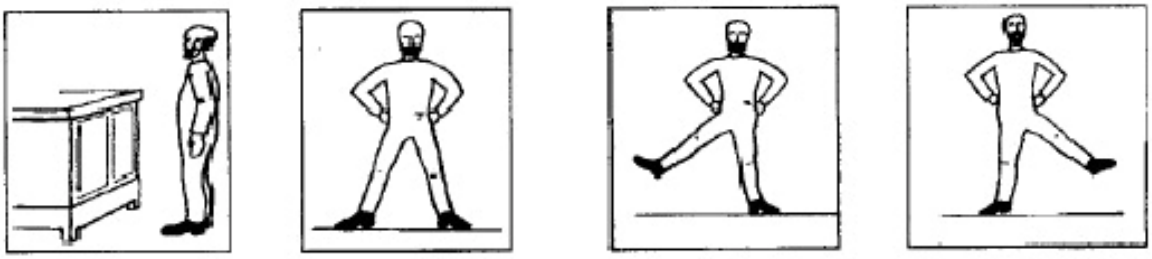
- Sitting down, hips and knees bent 90 degrees:
- Extend one leg and count slowly to 6; then release your leg.
- Point your toes towards your body.



EXERCISE 2.6 Reinforcing the buttocks

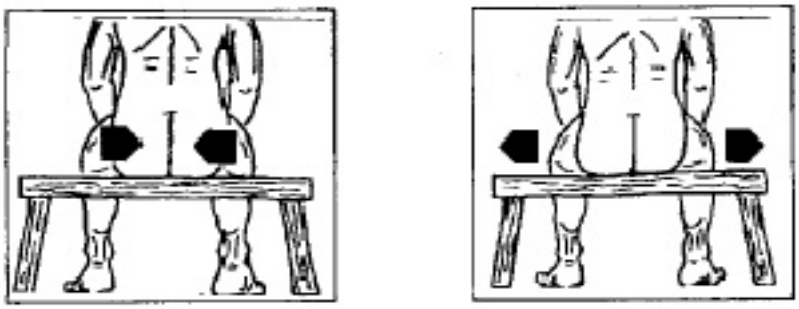
- Standing in front of a table or a piece of furniture:
- Stand legs apart, keeping them straight and then raise one leg 45 degrees.
- Move back to original position and repeat with the other leg.





EXERCISE 2.7 Reinforcing the buttocks

- Sitting or lying down:
- Squeeze your buttocks.
- Count slowly to 5 and then stop squeezing.



3. Balancing exercises in conjunction of head and eyes movement:

Exercises in standing position (while keeping the trunk straight up)

- Move your head from left to right.
- Move your head up and down.

EXERCISE 3.3 With feet placed firmly together:



With eyes shut (except when balance problems are present):

Exercices en position assise puis en position debout :

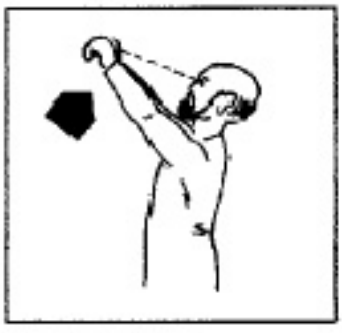
EXERCICE 3.4 Tenir un stylo ou une cuillère, les bras tendus, à deux mains

- fixer l'objet du regard
- faire des mouvements de rotation du tronc vers la gauche, puis vers la droite, en fixant toujours l'objet



EXERCICE 3.5 Tenir un stylo ou une cuillère, les bras tendus, à deux mains

- fixer l'objet du regard
- faire des mouvements des bras vers le pas puis vers le haut (sans bouger le tronc)


Bibliography

- Assemblée nationale. Projet de loi no 113 (2002, chapitre 71) ***Loi modifiant la Loi sur les services de santé et les services sociaux concernant la prestation sécuritaire de services de santé et de services sociaux*** : http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2002C71F.PDF

- ***Ce que vous devez faire si vous tombez*** : http://www.culture.gov.on.ca/seniors/french/programs/seminars/falls/docs/FallTips.pdf

- Comité d'examen sur la prévention et le contrôle des infections nosocomiales (2005). ***D'abord, ne pas nuire. Les infections nosocomiales au Québec, un problème majeur de santé, une priorité***. Rapport du comité : http://publications.msss.gouv.qc.ca/acrobat/f/documentation/2005/05-209-01web.pdf

- De Marcellis-Warin, Nathalie, chercheure au CIRANO (Montréal) ***La gestion des risques dans les établissements de soins au Québec : une réglementation à la hauteur des enjeux*** : http://imdr.eu/v2/extranet/iec-lettre40-noso.htm

- Dionne, Michelle (2002). ***La qualité lieu de convergence***. La sécurité du patient une question de qualité : http://www.fep.umontreal.ca/handicap/documentation/dionne112003AHQ.ppt#270,20

- Hôpital d'Ottawa. ***Sous-groupe du programme de prévention des chutes*** : http://www.hopitalottawa.on.ca/hp/dept/nursing/qi/groups-f.asp

- **John Dempsey Hospital, University of Connecticut Health Center.** ***Clinical Protocol Nursing Practice Manual*** **:** http://nursing.uchc.edu/nursing_standards/docs/Falls-%20Risk%20Identification,%20Prevention%20Management,%20and%20Treatment.pdf

- **Lockhart, Sally.** ***Activités de prévention des chutes chez les personnes âgées et les anciens combattants : analyse du contexte*** **:** http://www.phac-aspc.gc.ca/canada/les-regions/atlantique/pdf/Environ_scan_mars_2001.pdf

- Phaneuf, Margot (2007). ***Le vieillissement perturbé. La maladie d'Alzheimer.*** Montréal, Chenelière-Éducation.

- Phaneuf, Margot (2008). ***Enseigner pour soigner***. Infiressources, Carrefour clinique, section enseignement au client. http://www.infiressources.ca/fer/depotdocuments/Enseigner_pour_soigner.pdf

- ***Pouvoir vivre à domicile*** **:** http://www.pvad.net/index.html

- Rapport Francoeur (2001). ***La gestion des risques une priorité pour le réseau.*** Rapport du comité ministériel : http://publications.msss.gouv.qc.ca/acrobat/f/documentation/2000/00-915.pdf

- Rhéaume, François (2001). ***Les systèmes de gestion de la qualité des soins dans les hôpitaux du Québec*** : http://www.scinf.umontreal.ca/Cours/SOI6230/Documents/Francois_et_Rheaume_2001.pdf p1.

- Robitaille, Yvonne et Jean Gratton. Institut national de santé publique du Québec (2006). ***Les chutes chez les adultes âgés : vers une surveillance plus fine des données d'hospitalisation*** : http://www.inspq.qc.ca/pdf/publications/414-ChutesAdultesAgesHospitalisation.pdf

- Société française de documentation et de recherche en médecine générale. ***Prévention des chutes accidentelles chez la personne âgée. Argumentaire*** : http://www.has-sante.fr/portail/upload/docs/application/pdf/prevention_des_chutes_-_argumentaire.pdf.pdf

- Société française de documentation et de recherche en médecine générale. (2005). ***Prévention des chutes accidentelles chez la personne âgée. Recommandations*** **:** http://www.infirmiers.com/inf/protocole/geriatrie/Prevention_chutes_recos.pdf

- Société Scientifique de Médecine Générale. Recommandations de bonne pratique. ***Prévention des chutes chez les personnes âgées*** : http://www.ssmg.be/docs/rbp/textes/chutes.pdf

- ***Understanding Fall Risk, Prevention, & Protection*** : http://www.sizewise.net/getattachment/2d5c6915-509c-4d99-a653-bef8bcc56fdc/SW-Fall-Risk-Toolkit.aspx

- ***Le traitement de l'incontinence*** : http://www.phac-aspc.gc.ca/seniors-aines/pubs/info_exchange/incontinence/exch4_f.htm

- Vieillir de façon autonome et active. ***Faits concernant les chutes*** **:** http://www.falls-chutes.com/guide/francais/chutes/chutes1.html