

Preventing Fractures with Hip Protectors

Rein Tideiksaar, PhD
FallPrevent, LLC

This program was supported by a grant from



Preventing Fractures with Hip Protectors

Rein Tideiksaar, PhD
FallPrevent, LLC

Introduction

Falls in long-term care facilities (e.g., nursing homes and assisted living facilities) are a major health concern. It's estimated that up to 75% of residents fall yearly (1) (2). Hip fracture is one of the most serious consequences from falling. While 1-2% of falls result in a hip fracture, more than 95% of hip fractures are caused by a fall (3). Hip fractures are a major threat to the health and well-being of residents. Approximately 20% of residents suffering hip fracture die within six months of injury and only about 40% of survivors return to pre-fracture functioning (3). Many residents experience pain, anxiety and fear of falling and/or injury, which can persist for years after a fracture. Consequently, long-term care facilities need to include focus on preventing hip fractures.

To date, multidisciplinary strategies designed to reduce hip fracture include efforts to reduce falls, improve gait and balance, increase bone strength, and modify hazardous environmental conditions. However, these strategies have met with only partial success in reducing hip fractures. One approach that could potentially prevent hip fractures is the use of hip protectors. The purpose of this article is to provide guidance on the use of hip protectors in long-term care settings.

What is a Hip Protector?

Most hip fractures are due to ground-level falls while the resident is standing or walking; up to 75% of hip fractures occur under these circumstances (3). In most cases, the immediate cause of hip fracture is a sideways fall with direct impact on the hip (i.e., the greater trochanter of the proximal femur). Falls to the side, in contrast to falls forward or onto the buttocks, increase the risk of hip fracture (4). Several factors are associated with the risk of hip fracture following a fall. In addition to a loss of bone strength (i.e., osteoporosis), one of the principle determinants of injury is a reduction of soft tissue or fat covering the hip area. As a result, the hip's ability to withstand an impact with a hard floor surface and protect against a hip fracture is diminished (3).

Hip protectors are a device designed to absorb and disperse the impact of a fall on the hip bone, which helps to reduce the risk of hip fracture. In essence, hip protectors act as shock absorbers around the hip providing a cushion between the hip bone and impact surface.

The current design of hip protectors consists of high impact absorbing foam pads that are held in place at the hips with specially designed removable briefs or underwear (i.e., the pads are either sewn into or inserted inside pockets located over each hip). Some models include a removable tailbone pad to protect against injury. These light weight, stretchy garments come in a range of sizes to ensure proper fit.

Who Benefits from a Hip Protector?

Residents

While all residents may potentially benefit from wearing a hip protector, the best use of a hip protector is in those residents who are at the greatest risk of hip fracture. These include residents with:

- History of injury following a fall
- History of osteoporosis and multiple falls
- Balance impairment
- Diseases (e.g., stroke, Parkinson's disease, diabetes, Alzheimer's disease, etc.) associated with balance loss and hip fracture risk.
- Medications associated with balance loss and falls (e.g., narcotics, sedatives or antidepressants, etc.).
- Seizure disorder
- Frequent nocturia (i.e., nighttime toileting)
- Dementia with agitated behaviors
- Fear of falling and/or injury (i.e., hip protectors offer psychological benefits; wearers feel more confident in completing tasks safely and, as a result, became more physically active, and require less assistance with activities of daily living.

Caregivers

- Nurses and nursing assistants experience reduced 'fear of injury' when residents at fall and hip fracture risk are wearing hip protectors.
- Hip protectors provide nurses with an additional injury prevention strategy that is more far-reaching in its applicability than current devices in use (e.g., low beds and floor mats), which are limited to guarding against injurious falls from bed. While many falls with injury occur in the resident's bedroom, injurious falls and hip fractures occur throughout the facility.

Long-term Care Facilities

Fewer reports of hip fractures can result in:

- Improved facility quality ratings.
- Improved state and other survey results with regard to fall prevention.
- Improved healthcare cost savings (5) (6).

Are Hip Protectors Effective?

Hip protectors are effective in reducing the incidence of hip fractures in long-term care settings, especially in high-risk residents (7) (8). The risk of suffering a hip fracture when falling and wearing a hip protector, compared to not wearing a hip protector, is greatly reduced. It's estimated that hip fractures can be reduced by as much as 60% with the use of hip protectors (9).

While the effectiveness of hip protectors is evident, low compliance is a major obstacle in the effective use of hip protectors. The effect of hip protectors is obviously very much linked to where the protector is – whether it is protecting the hip or in a drawer. Clearly, hip protectors will only work if they are worn. Major compliance problems associated with the use of hip protectors and solutions to increase compliance are included in Table 1(4). With improved compliance, which is both feasible and sustainable in at-risk long-term care residents, hip protectors are an effective prophylactic against hip fractures (10).

Key Components of Implementing Hip Protectors

The ability to prevent hip fractures and appropriately use hip protectors is dependent upon nursing staff adhering to a clinical process or practice of care, which assists staff in identifying factors contributing to hip fracture risk and deciding on the use of hip protectors as a strategy (4). The key components of a “best practice” approach to implementing hip protectors consists of identifying residents at risk of falls and hip fracture, assessing the need for a hip protector, determining hip protector use, communicating the resident’s risk status and hip protector use to all staff, and monitoring the effect of the hip protector.

Assessing Fall and Injury Risk

The purpose of risk assessment is to identify those residents most likely to fall and raise staff awareness of hip fracture risk. The rationale for this assessment is that if residents at high risk can be identified, then appropriate interventions, such as providing a hip protector, can be instituted to minimize their risk of injury. Therefore, conducting a fall and injury risk assessment (Table 2) represents an important starting point in attempting to reduce hip fractures.

Using a formal risk assessment is important as leaving the assessment of risk solely to “staff judgment” alone is risky; some staff have better judgment than others. A basic fall and injury risk assessment, which can be implemented in most long-term care settings, is included in Table 2. When implementing a fall and injury risk assessment, it’s important to select a process that is user friendly for staff (i.e., staff will not be adherent with an onerous process). Assessment of risk should take place at the time of admission, post-fall and whenever residents experience a “change of condition”.

Assessing Need for Hip Protectors

If the resident has one or more of the risk factors included in Table 2 and altered mobility, they may be a candidate for a hip protector. The type of resident most suitable for a hip protector include those who are unsteady and have frequent falls, history of fractures from falls, osteoporosis and/or limitations of activity secondary to fear of falling.

Determining Use of Hip Protectors

Once the decision has been made to use a hip protector, the next step is to determine when the hip protector is used (e.g., every day, every night, every day and night, during specific activities only, such as bathing/showering, exercising, etc.). It’s important that this information is communicated to all staff caring for the resident. Small cues can be left in different locations so that nursing staff are reminded of when hip protectors should be worn.

Communicating Risk

Once a resident’s risk of hip fracture risk has been identified and a decision on using a hip protector has been made, it’s crucial that their risk status, specific risk factors and use of the hip protector are communicated to all nursing staff involved. Communication of risk can be achieved by means of:

- Posting a daily list of residents who are assigned to wear hip protectors.
- Using shift reports to communicate which residents are assigned hip protectors.
- Using of colored stickers (i.e., placing hip protector symbol on the resident's chart, on the bedroom wall above the bed, etc.) or wrist bands to identify residents who should and are wearing hip protectors. In this way, everyone in the facility knows that residents wearing a colored wristband for example are “at risk” and should be wearing a hip protector.

Monitoring

Because hip fracture risk is a dynamic process, often subject to change, monitoring of residents “at-risk” should occur on a regular basis. The purpose of monitoring is to:

- Detect any change of condition (e.g., diseases, cognition, mobility and new medications) and reassess injury risk.
- Evaluate the compliance and effectiveness of the hip protector in reducing hip fracture risk.
- Decide on what to do next if the hip protector is not effective in reducing risk.

Achieving a Successful Hip Protector Program

Aside from having in place an organized approach towards identifying risk of hip fracture and appropriate selection of hip protectors, there are a number of other steps that long-term care facilities can take to achieve an effective hip protector program.

Appoint a “Hip Protector” Nurse Coordinator or Champion

Identify a nurse champion to support and follow through with the hip protector program. This individual pulls together a facility’s hip protector program, takes responsibility to make things happen and sees what needs to be changed and improved. The hip protector champion’s task may include:

- Familiarize staff hip protectors and its role in the prevention of hip fractures.
- Provide ongoing education of staff and training of new staff with respect to hip protectors.
- Oversee staff compliance with hip protectors.
- Ensure that communication of residents using hip protectors occurs between staff and shifts.
- Collect data and evaluate resident outcomes with respect to hip protectors.
- Provide supportive feedback to staff regarding hip protector use.
- Maintain hip protectors and serve as the main “connection” with hip protector vendors.
- Maintain and update hip protector guidelines, policies and protocols.
- Problem solve; address compliance and other issues with hip protector use.
- Provide administration with feedback on hip protectors (i.e., hip protector effectiveness, numbers of hip protectors needed, etc.).

Provide Education

Staff Education

Ongoing staff in-service regarding hip protector use is essential and hip protectors should only be implemented in combination with an educational program. The purpose of education is to increase staffs’ knowledge and skills in identifying residents at risk of hip fracture and the appropriate use of hip protectors. When designing in-service programs, it’s important to include discussions on measuring residents for proper size, types of residents best suited for hip protectors, number of hip protectors each resident should receive, how hip protectors should be worn, and how to overcome common hip protector compliance problems. It’s important to include Nursing Assistants as they are the staff that will utilize hip protectors the most. Education should occur during facility orientation and, subsequently, on a regular basis (i.e., audits of the care process can be used to detect any deficient practices and identify topics for in-service). Laundry and housekeeping should be in-serviced as well with respect to the handling and laundering of hip protectors.

Resident and Family Education

Promotion of ongoing communication and involvement with the residents and their families is an important ingredient to the success of a hip protector program. Educate residents, as appropriate, and/or their family about hip fracture risk, hip protectors and why hip protectors are being used. It's important to enlist the help of families as they too can assist in preventing hip fractures (i.e., if families are aware of why the resident is at risk, they can communicate any potentially risky behavior and/or conditions to staff).

Create a System of Administrative Support

Strong administrative or management leadership is essential for the successful use of hip protectors. The primary role of leadership is to make hip fracture prevention a top priority within the facility and to support staff in their efforts to prevent fractures, including the use of hip protectors. Important tasks to consider include:

- Make hip protectors an explicit and important aspect of the facility's planning program and budget allocation.
- Conduct regular audits of fall and injury prevention activities (i.e., determine whether staff are assessing hip fracture risk and implementing hip protectors appropriately). This helps separate what you think is happening from what is really happening.
- Ensure that adequate numbers of hip protectors are available.
- Keep all policies, procedures and manuals related to hip protectors updated.
- Develop a process for recognizing and rewarding the efforts of staff for their efforts related to the successful use of hip protectors.

Summary

Hip protectors are an effective strategy for reducing fall-related hip fractures in long-term care settings. The success of a hip protector program is enhanced by educational activities and administrative support, and a nurse champion to assume responsibility for the hip protector program.

References

- (1) Tideiksaar R. Falls in older persons, 3rd Edition. Baltimore: Health Professions Press, 2002.
- (2) Tideiksaar R. Managing Falls in Assisted Living Facilities. Baltimore: Health Professions Press, 2006.
- (3) Tideiksaar R. Falls in older persons: its prevention and treatment, 2nd Edition. New York: Springer, 1997.
- (4) Tideiksaar, R. Guide to Hip Protectors. Baltimore: Health Professions Press, 2006
- (5) Honkanen LA, Schackman BR, Mushlin AI, Lachs MS. A cost-benefit analysis of external hip protectors in the nursing home setting. *J Am Geriatr Soc.* 2005 Feb; 53(2):190-7.
- (6) Meyer G, Wegscheider K, Kersten JF, Icks A, Muhlhauser I. Increased use of hip protectors in nursing homes: economic analysis of a cluster randomized, controlled trial. *J Am Geriatr Soc.* 2005 Dec; 53(12):2153-8.
- (7) Meyer G, Warnke A, Bender R, Muhlhauser I. Effect on hip fractures of increased use of hip protectors in nursing homes: cluster randomized controlled trial. *Br Med J* 2003; 326: 76–8.
- (8) Parker MJ, Gillespie LD, Gillespie WJ. Hip protectors for preventing hip fractures in the elderly (Cochrane Review). In *The Cochrane Library*, Issue 3, 2003. Oxford: Update Software.
- (9) Kannus P, Parkkari MJ, Niemi, S, et al. Prevention of hip fractures in elderly people with use of a hip protector. *N Engl J Med* 2000; 343: 1506-1513.
- (10) Burl JB, Centola J, Bonner A, Burque C. Hip protector compliance: a 13-month study on factors and cost in a long-term care facility. *J Am Med Dir Assoc.* 2003 Sep-Oct; 4(5):245-50.

Table 1 Compliance problems with hip protector use and solutions to increase compliance

Adherence Factors	Problems	Solutions
<p>Resident</p>	<p>Does not accept HP; low perception of hip fracture risk.</p> <p>Uncomfortable (too tight; poor fit; pads move).</p> <p>Incompatibility with urinary incontinence</p> <p>Difficult to put HP on independently</p> <p>Incompatibility with cognitive impairment and dementia (inability to comprehend reason for HP; may see HP as nuisance item).</p>	<p>Resident education; compliance increases if information about risk of fracture/HP is provided. Fallers tend to have more of a positive view of HP than nonfallers.</p> <p>Committed staff who demonstrate understanding and support are vital in encouraging ongoing HP use.</p> <p>Make sure that HP fit correctly. HP needs to be fitted for the correct size, to fit snugly.</p> <p>Select HP specific for incontinence. HP can be worn with incontinence wear, if necessary.</p> <p>Amount of help needed putting HP on will vary depending on upper extremity strength and dexterity; using a HP that is one size larger may help (make sure pads remain aligned with/cover hips).</p> <p>Note: Since dressing and undressing can increase the risk of balance loss/falls and hip fractures, only staff should put on/take off HP. If patient self-dress, observe balance while putting on HP.</p> <p>In general, when demented individuals acquire habit of wearing HP, they continue to wear it.</p>

Table 2 Fall and Injury Risk Assessment

Inquire about:

- Previous falls/injurious falls
- Drugs (especially psychotropics/sedatives)
- Altered cognitive function
- Lower/upper extremity weakness
- Osteoporosis
- Elimination problems (urinary incontinence, frequency)
- Ambulatory aid use (cane/walker)
- Altered mobility (unsteady gait/balance; impaired transfers) (*)

(*) Observe the resident:

- Get up from a chair (without use of armrests, if possible)
- Stand still momentarily
- Walk forward 10ft
- Turn around and walk back to chair
- Turn and sit down in the chair

Factors to note:

- Transfers from sitting to standing
- Stability of walking
- Ability to turn without staggering/balance loss