Enhancing the safety of hospitalization by reducing patient falls

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The iatrogenic nature of hospitalization places patients at risk of falling, injury, and death. In this article, the major principles of providing protective and preventive interventions are outlined. The principles are the establishment of a multifaceted fall prevention program that targets fall interventions according to each etiologic factor; the recognition that fall protective and prevention interventions are distinct and serve a different function; the use of the fall monitoring system comprehensively; the creation of a clinical nurse specialist position, responsible for fall intervention; and a conscious and individualized approach to fall prevention. The process and problems of the varying nature of providing fall protection and fall prevention are discussed; for example, use of a side rail as a protective strategy may be successful with one patient but considered a hazard when used with a different patient. (Am J Infect Control 2002;30:376-80.)

Even though patient falls are the largest single category of reported incidents in hospitals,[1,2] hospital programs for fall prevention remain haphazard and fall protection strategies are applied unsystematically in patient care. Some programs and instruments aimed at identifying the patient at risk of falling have been used even though they were not developed from patient assessment, were not tested with control groups, and were not assessed for reliability and validity. Fall prevention and protective strategies, under the purview of quality assurance, remain optional rather than mandatory, under the auspices of "best practices" rather than standards for care. Consequently, patients continue to fall during hospitalization, with rates per 1000 beddays reported from 2.2 to 7 in acute care hospitals,[3,4] 11.9 to 24.9 in long-term care hospitals,[5] and 8.9 to 19.8 in rehabilitation hospitals.[6,7] Injury rates have been reported to be 29% to 48%, with 4% to 7.5% resulting in serious injuries.[6-9] These rates may be inaccurate; they may be lower because of the optional nature of reporting or inflated because of the novelty of a fall program. For example, Kanten et al[10] found that neither incidence reports nor chart review was accurate for fall numbers, although the combination of both accounted for 92% of incidents.

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Presented at the APIC "Patient Safety: Tools for Implementing an Effective Program" conference in Baltimore, Maryland, from January 10-11, 2002.

Supported by Hill-Rom Industries, a Senior Scholar Award from the Alberta Foundation for Medical Research, and a Senior Scientist Award from the Canadian Institutes for Health Research.

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0196-6553/2002/$35.00 + 0 **17/49/125808**

doi:10.1067/mic.2002.125808

This article reviews the rationale and principles of fall prevention and protection in a hospital-based program designed to reduce patient falls and fall-related injuries and to provide a framework for reducing fall risk, preventing falling, and protecting patients from injury should a fall occur.

RATIONALE FOR FALL PREVENTION AND PROTECTION

The multifactorial etiologic factors of patient falls underlie fall prevention programs. Some years ago, fall causation was classified as either *intrinsic* or *extrinsic*[11]; however, this classification scheme is inadequate because it does not necessarily categorize all falls[6] and only partially directs approaches to interventions. Rather, the classification of falls as *accidental, unanticipated physiologic*, or *anticipated physiologic*[12] encompasses all types of falls and fits appropriately with approaches to prevention.

Accidental falls occur when patients fall unintentionally (eg, they may trip, slip, or fall because of a fail-

ure of equipment). Although approximately 14% of all falls are accidental,[12] most fall prevention strategies are targeted toward this type of fall. It is important to recognize that patients who experience an accidental fall cannot be identified before the fall and do not score at risk of falling on a predictive instrument, such as the Morse Fall Scale (MFS).[13] The MFS is a quick, easy method of determining the risk of falling. It consists of 6-items and has established reliability and validity testing.[12]

Unanticipated physiologic falls occur when the physical causes of the falls are not reflected in the patients' risk factors for falls. A fall in one of these patients is caused by physical conditions that cannot be predicted until the patient falls. For example, the fall may be due to fainting, a seizure, or a pathologic fracture of the hip. Unanticipated physiologic falls constitute 8% of all falls in the hospital.[12]

Anticipated physiologic falls occur in patients whose score on the MFS indicates that they are at risk of falling. According to the scale, these patients have some of the following characteristics: a prior fall, weak or impaired gait, use of a walking aid, intravenous access, or impaired mental status. These patients are expected to fall. Even if the actual "trigger" for the fall may be that a patient with an impaired gait tripped, because of the impaired gait, it is expected that the patient will trip; therefore, the cause of the fall is classified as anticipated rather than accidental. Anticipated physiologic falls constitute 78% of all falls in the hospital population.[12]

PRINCIPLES OF FALL INTERVENTION PROGRAMS

Fall interventions

Fall interventions must be linked to each etiologic factor. Accidental falls are preventable by ensuring a safe environment. Slips are preventable, for example, by ensuring that water and urine are immediately wiped up and that slippers and shoes have nonskid soles. Equipment is routinely checked and repaired; bed brakes hold the bed and do not permit it to roll away if someone leans on it; wheelchair foot pedals do not flop down, and the brakes also hold; rubber tips of canes and walkers are in good repair; hand rails are appropriately placed at the proper height. Checklists for routine inspection of such equipment are available.[12]

Since the first unanticipated physiologic fall is, by definition, unexpected, it cannot be prevented and, depending on the cause, subsequent falls may also not be prevented. In the latter case, the goal is to protect the patient from injury should a fall reoccur. Protective strategies are individualized and include such things as teaching the patient how to fall safely or to rise from a prone position slowly and by providing helmets.

Interventions for patients who score at risk of an anticipated physiologic fall are both protective and preventive. Protective strategies must be immediately provided. These include increased observation to provide appropriate assistance with ambulation, bed alarms (which are intended to alert staff to provide assistance before the patient gets out of bed), establishment of routines such as regular toileting (ie, so that the patient will not become restless and try to get out of bed alone), teaching of protective behaviors (eg, teaching a patient how to fall or to transfer safely), devices to assist with ambulation (eg, walkers and hand rails), and devices to minimize injury if the patient does fall (eg, hip protectors or helmets).

Prevention strategies are also used with patients who are at risk for anticipated physiologic falls. These strategies are designed to reduce fall risk (ie, to lower the patient's score on the MFS). This goal is usually accomplished through use of a more detailed fall assessment from which specific interventions may be identified. For instance, when the patient has a gait assessment, the interventions may include physical therapy or a new type of walking aid; the confused patient may have a medication assessment followed by adjustment of type, dose, or time of medications. These interventions may result in improvement in gait or mental status, respectively.

Fall protective and preventive interventions are distinct

It is important to clarify the differences between *fall protection* and *fall prevention* interventions.

Protective strategies are primarily the responsibility of nurses. These strategies are intended to prevent an imminent fall, or, if the patient does fall, to protect the patient from injury. Therefore, the patient should be assessed to identify appropriate protective strategies on admission and reassessed with any change of condition or, if a fall does occur, to protect from a second fall. The latter is particularly important because repeated falls are not uncommon.[14] Morse[12] found that 69% of patients who experienced more than 1 fall in a rehabilitation hospital were engaging in the same activity during the next fall.

Protective strategies must be immediate and responsive to patient needs. If a patient is admitted on the weekend and needs a walker, then one must be provided immediately. These needs cannot wait until Monday, when the appropriate department reopens. If a patient is restless, appropriate staffing must be immediately provided to allow for the monitoring and safety of that patient. The availability of adequate protective strategies will make the greatest difference in reducing the fall and injury rates.

Protective strategies require resources. Patients who refuse to use their call bell and continue to climb out of bed despite warnings may be protected from injury if a staff member remains with the patient or if a bed alarm is placed on the bed. Another example that requires adequate staffing is the waking of patients for toileting at regular intervals during the night. Hospitals must budget accordingly for the costs of fall interventions.

Fall protective care plans must be individualized and evidence-based. Hospital-wide policies should dictate personalized assessment rather than rigid rules for providing care. Strategies intended to protect one patient may place another patient at risk; therefore, individual assessment is crucial. For example, if side rails are used to remind the patient where the edge of the bed is, they are used to protect the patient from rolling out of bed. But if the side rails are intended to keep a restless patient in bed, they may increase the risk of injury because the patient may attempt to climb over the side rail or the end of the bed or may try to force himself or herself through the rails. Furthermore, evidence, rather than custom or habit, is required to determine the appropriate protective mechanisms because the traditional interventions of immobilization, restraints, and side rails that are intended to prevent falls may instead decrease mobility,[15] increase the risk of falling and injury,[8,16] and contribute to mortality.[17,18]

We also must examine assumptions about the use of the patient call bell, which may be relied on by staff but may not provide protection against falls. The patient must not only recognize the need for assistance and remember to push the buzzer but also must believe that assistance is nonthreatening, welcomed, and forthcoming. If not, patients may attempt to go to the bathroom alone and are at increased risk of a fall.[19]

Preventive strategies, on the other hand, do not usually have an immediate effect (as in the case of reducing the fall risk of an anticipated physiologic fall) or are not targeted directly to a specific patient (as in the case of preventing an accidental fall). A number of instruments are available to assist with patient fall assessment,[20-22] which is often the responsibility of medical or physical therapy staff. Fall assessments are designed to determine physiologic problems that may result in a fall—primarily those that interfere with gait or mental status.[23] Some require special equipment, such as an isokinetic dynamometer to evaluate muscle strength,[24] or specific measurement tools, such as the Activities of Daily Vision Scale.[20] Medical examinations are slow and unsuitable for screening and therefore used only for diagnostic purposes and to periodically check for improvement.

Fall assessments do not substitute for predictive scales that determine the risk of falling. One group of researchers[25] concluded that efforts to predict falls are less beneficial than a program of education and fall prevention when an assessment tool is mistakenly used rather than a predictive risk scale. However, because the majority of falls can be anticipated and linked to particular risk factors, it is essential to use a reliable and valid instrument for fall risk to implement corresponding interventions that are effective.

INSTITUTIONAL APPROACHES TO ENSURING PATIENT SAFETY

Principles of institutional approaches for ensuring patient safety include establishing a system for monitoring patient falls, establishing a coordinated program for reducing patient falls, and ensuring adequate funding for fall protection.

Use the monitoring system comprehensively

Monitoring systems of fall rates are usually established by hospitals for monthly and annual reporting purposes; they are a score card, so to speak, on the effectiveness of the program. However, the fall monitoring system should be an integral part of fall prevention. Used in 4 ways, the monitoring system does the following:

1. Enables assessment of the severity of the problem and the cost of patient falls. The severity statements should be used not only when planning a program but also on a regular basis to make a case for a continuing problem.

2. Enables evaluation of the efficacy of the program institution-wide, and allows for estimates of cost savings. When compared with baseline, preprogram statistics, annual rates should give ongoing information about the success of the fall prevention program. However, the interpretation of these statistics should be viewed in context of staffing levels, patient acuity data, and the fall reporting rates. At the commencement of a fall program, falls, may suddenly increase because of changes in reporting rates. Fall injury rates may be a better predictor of the success of the program.
3. Assists with the identification of "hot spots" or patterns of fall incidents. These may be achieved in a number of ways, including the following:
   a. By patient typology: Analysis of statistics by patient characteristics, separate from patient care unit, will provide important information on patterns about who is falling. For instance, statistics should be inspected against the MFS and by item. Do most patients who fall have a score that indicates they are "using the furniture" to ambulate? Why are these patients not provided with assistance or a walking aid?
   b. By unit or service: If most of the falls are occurring in specific units or services, special attention must be given to the causes of these falls. Should, for instance, more staffing be provided? Should an environmental scan be conducted to consider the addition of more hand rails?
   c. By "geographical" location: The locations of falls are classically bathrooms or at the bedside. Other hot spots must also be considered (eg, a foyer or doorway). Safety begins with awareness of the problem—use your monitoring system to its full capacity.
   d. By particular equipment: Falls may be repeatedly occurring from wheelchairs or involving walkers—look for such patterns.
   e. By circumstance (including time of fall): What are patients doing when they fall? Transferring? Rushing to the bathroom? Consider patient activity in your institution-wide monitoring system so that staff may be alerted to these patterns.
4. Enables immediate responsiveness to multiple (repeated) fallers. The monitoring system may provide instant feedback to staff about time, location, and patient activity of a fall. Since the second and subsequent fall may occur when the patient is doing the same thing, this information can be incorporated into the patient's care plan and a repeated fall circumvented.

Creation of a clinical nurse specialist position responsible for fall intervention

A fall prevention program is not simply an "add on"—something that staff can simply add to their workload without incurring any additional costs. Implementation must be planned and systematic and include staff training. The various disciplines must approach the intervention programs cohesively, each bringing forth their specific areas of knowledge, including medicine, nursing, pharmacy, and physiotherapy. A clinical nurse specialist (CNS) who would be responsible for establishing and maintaining the fall prevention program must be appointed. Responsibilities of the CNS would include the following:

1. Consistent use of fall prediction instrument (MFS). All nursing staff should be instructed in the MFS. One of the responsibilities of the CNS will be to provide staff inservice education.
2. Fall assessment of high-risk patients and patients who fall repeatedly. Patients who score at risk of falling must be individually assessed to identify appropriate fall protective care plans. As these care plans are individualized (and often creative), the CNS will, over time, build a compendium of successful strategies.
3. Coordination of the Fall Committee. The role of the multidisciplinary Fall Committee is to examine patients who are at very high risk of falling or who have experienced repeated falls. Assessment may include a gait assessment and adjustment of medications, with the aim of reducing the patient's fall score.
4. Requisition, maintenance, and inservice of fall protection devices. Preventing accidental falls requires constant vigilance for hazards and continual upkeep of equipment.

Maintain a conscious and individualized approach to fall prevention

Awareness of individualized approaches to fall prevention is necessary to create effective interventions. Carte blanche application of protective or preventive policies may increase fall risk or risk of injury to some patients. For example, uniform "side rails up" or "side rails down" policies ignore differences in side rail length and bed design and differences in a patient's conditions and needs. For instance, frail, cachectic, extremely confused, and restless elderly patients are not safe in beds (ie, if the side rails are down, they will fall from the bed, and if the side rails are up, they are likely to go through the side rail or over the end of the bed since these patients are not usually strong enough to pull themselves over the top of the side rail). On the other hand, an elderly, postsurgical patient may appreciate the side rails up because they provide a feeling of comfort by serving as a reminder of where the edge of the bed is and enable the patient to control his or her bed position by providing a handhold to assist with moving about the bed.

It is essential to note that side rails have never kept a patient in bed and should never be used as a restraining device. Such attempts force the patient who is determined to get out of bed unassisted to climb over the rail (and increase the distance of a fall) or over the end of the bed (a vertical fall), placing the patient at risk of injury. On the other hand, three-quarter–length side rails increase patient safety because they provide the protective function of reminding the patient where the side of the bed is and have the advantages of allowing access to the bed controls, provide a safe route out of the bed, and can serve as a handhold for patients as they exit and once they are standing. These supportive advantages are very important for confused patients. When used with a bed alarm, these rails provide adequate support for the patient until nursing assistance arrives. As the patient takes time to move down the bed to the gap in the side rails, the use of appropriate bed alarms can even give the nurse time to reach the patient before the patient exits the bed.

CONCLUSION

The iatrogenic nature of hospitalization places patients at risk of falling, injury, and death. It is our responsibility to provide protective and preventive interventions to minimize and to eliminate this risk. Understanding the principles of fall interventions and the role and appropriate use of fall protective and preventive interventions and of implementing a comprehensive program that targets interventions appropriately and effectively will meet the hospital's goal of providing safe care efficiently and at minimal cost.

The author thanks Charlotte Pooler, MN, and Dan Given, MA, for their assistance in the preparation of this article.

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