

Implementing a Fall Prevention Program

December 1, 2011

Healey F. Implementing a Fall Prevention Program. PSNet [internet]. 2011.

<https://psnet.ahrq.gov/perspective/implementing-fall-prevention-program>

Perspective

Throughout the developed world, most hospital beds are occupied by older people, many of whom have been admitted because of mobility problems, falls, or injury from falls (1), making fall prevention a very pressing hospital risk management and patient safety challenge. Multi-hospital studies suggest average rates of between 3 to 5 falls per 1000 bed-days (2,3), with much higher rates reported from areas such as geriatric, psychogeriatric, neurology, and rehabilitation units. While rates allow for comparison between hospitals of differing sizes, they can disguise the sheer scale of the problem. These rates would represent more than 1000 falls per year in a large acute hospital (2) and perhaps as many as 1 million falls in hospital patients each year in the United States.(1) Additionally, these rates only describe reported falls; under-reporting also has to be factored in.(4)

Between 30%–50% of inpatient falls result in some injury (2,5), with 1%–3% resulting in fractures.(6,7) For patients already ill enough to require hospitalization, the likelihood of an injury resulting in death, disability, dependence, or admission to institutional care are even greater than for older adults living in the community.(8) Although the toll on patients is the most concerning, falls also extract an increasingly large cost on health care providers—financial consequences include direct treatment costs, increased length of stay, litigation, and complaints.(9) Even supposedly "no harm" falls can cause distress and anxiety to patients, their family members, and health care staff, and may mark the beginning of a negative cycle where fear of falling leads an older person to restrict his or her activity, with consequent further losses of strength and independence.

Is "Zero Falls" a Reasonable Aim?

The challenge facing health care staff is to balance fall prevention with privacy, dignity, independence, and rehabilitation. If we prevent older people from walking, from using the toilet unobserved, and from undertaking any activity without arms' length supervision, we may achieve our aim of fall prevention—but with unacceptable consequences for independence and rehabilitation. Even 1 or 2 additional days of inactivity after acute illness or surgery can significantly affect recovery, and a patient who is not permitted

to walk alone can rapidly become a patient who is unable to walk alone. Balancing these competing risks is even more vital in a health care economy where falls may be designated a never event with financial penalties attached.(10)

Given this tension, achieving zero falls is not a reasonable aim, because it would lead to other negative consequences in terms of mobility. But, we can certainly decrease the frequency of falls as well as the chances that falls that do occur lead to harm.

Predicting Falls in Hospital Settings

Since prevention often involves targeted interventions, some of which may be costly, it can be useful to ask whether patients at highest risk can be identified prospectively. Patients of all ages fall, but more than 80% of falls in hospitals occur in patients older than 65 years, with the highest risk of falls seen in patients older than 85 years.(2,6) The causes of falls are complex, with the risk factors most frequently found in hospital patients including delirium, agitation or confusion, postural hypotension, syncope, neurological and muscular-skeletal conditions, "culprit" medications, and problems with balance, strength, or mobility.(1) Pre-existing conditions like poor eyesight or dementia can predispose to falls when someone is out of their normal environment on a hospital ward, as they are less able to spot and avoid any hazards. Incontinence or urinary frequency can render patients vulnerable to falling while making urgent journeys to the toilet.(2) In the hospital setting, there is an additional key ingredient: hospital staff actions and their interactions with patients. Patients who do not receive timely assistance with activities that they are unable to undertake safely alone are undoubtedly placed at higher risk.

Tools exist that aim to translate some of these well-known risk factors into a simple risk score that will predict patients who are at high or low risk of falls. However, systematic review suggests that even the best validated of the plethora of published fall risk scores have relatively low sensitivity and specificity, and even weaker positive predictive value.(11) This finding has very real clinical implications: low sensitivity means the tool gives false reassurance and fall prevention opportunities are missed, and low positive predictive value means fall prevention efforts are spread too thinly. Tools that may have performed well in an original study are often less accurate when used in units with different patient populations, so it is essential that health care organizations understand the limitations of any fall risk score they use locally. Simple methods of doing this, including a spreadsheet to automatically calculate predictive values, are freely available.(12)

An additional consideration, over and above whether fall risk scores accurately predict future falls is what practical clinical benefit we might gain from doing so. As outlined below, effective fall prevention interventions focus on addressing specific risk factors, such as delirium or incontinence, which always merit intervention in their own right. Therefore, it may be more appropriate, effective, and ethical to directly link specific risk factors with specific interventions—for example, providing medication review for all patients receiving multiple medications or particularly high-risk medications—rather than only for those patients at high risk of falls. To date, the comparative effectiveness and cost-effectiveness of a fall prevention program targeted to high-risk patients versus one applied more generally has not been studied, but it is notable that most successful fall prevention interventions (1) have focused their efforts on very vulnerable patient groups (e.g., those admitted with fractured hip or needing rehabilitation).

Preventing Inpatient Falls

Evidence from community and care home settings cannot be assumed to automatically apply to hospitals, as inpatients' risk factors are more likely to be connected to acute illness, and the window for intervention is much shorter. However, increasing numbers of randomized control trials (RCTs) and well-designed before-and-after trials from hospital settings can inform practice, summarized in recent systematic reviews and overviews.[\(1,13-14\)](#) Key conclusions are that exercise focused on strength and balance training may reduce the rate of falls in subacute hospital patients, and multifactorial interventions can reduce the rate of falls by 20%–30% in acute and subacute hospitals. But, what interventions within the multifactorial "bundle" appear to be the most effective? Components most often seen in successful trials include:

- Multidisciplinary (rather than solely nursing) responsibilities for intervention.
- A focus on prevention, detection, and treatment of delirium, including dip-testing urine for indications of infection.
- Review and (where appropriate) discontinuation of "culprit" medications associated with increased risk of falls, especially psychotropic medication.
- A postfall review used as an opportunity to plan secondary prevention, including a careful history to identify potential syncope.
- Continence management, including routines of offering frequent assistance to use the toilet.
- Early access to advice, mobility aids, and (where appropriate) exercise from physiotherapists.
- An individualized plan of care that is responsive to individual's differing risk factors, needs, and preferences.
- Provision of safe footwear (rather than solely advice on safe footwear).
- Staff and patient education (if provided by health professionals and structured rather than ad hoc).

Notice that most of these recommendations are relatively "low tech." Evidence for the effectiveness of technology to prevent falls and injury, including ultralow beds, movement alarms, and hip protectors, is limited or conflicting.[\(1\)](#) Introducing new technology may, however, help break a mindset where falls are seen as unpreventable, as may even modest improvements to the safety of the built environment such as installing hand rails, nonslip flooring, or improving lines of sight. While studies of hourly rounding and volunteer observers [\(15,16\)](#) show some promise in preventing falls, they also suggest that maintaining these interventions requires constant and sustained effort. While identifying and treating osteoporosis, including vitamin D and calcium supplementation and bone-strengthening treatments, are unlikely to reap benefits during the hospital stay, using hospital admission as a window of opportunity to commence treatment is important given the longer-term benefits.[\(17\)](#)

Systematic review suggests that routine bedrail use, as well as the opposite extreme of routine bedrail removal, can both increase risk of falls.[\(18\)](#) An assessment of risks and benefits for individual patients is required, and equipment should be compliant with recommended dimensions to avoid entrapment.[\(19\)](#) Given the ethical issues and the harms associated with other types of physical restraints [\(20\)](#) and restraining chairs [\(21\)](#), the lack of evidence of their effect on falls in the hospital setting is probably immaterial; at best they should be seen as an absolute last resort, prescribed under multidisciplinary supervision, and applied for the minimum period possible.

Is Current Practice Adequate?

For fall prevention, the key challenge is consistently applying the available evidence in practice. Health care organizations may achieve high compliance with assessment, but this will not be translated into reduced harm unless assessment is consistently linked with intervention; simply labelling individual patients as high risk through bedside signs and wristbands does not in itself prevent falls.(22) Even the basics of fall prevention, such as keeping nurse call bells in reach and promptly responding to them, may not be consistently maintained in all hospitals at all times, and the use of physical restraints remains far higher in the U.S. (23) than in some other countries.(24) While in many other areas of patient safety standardization promoted consistent implementation, in fall prevention, one must resist a tendency to standardize inappropriately without considering the varying needs of individual patients. For example, a universal "beds at lowest possible height" requirement is likely to increase the number of falls in taller and frail but independently mobile patients.

The Way Forward

For any health care organization seeking to renew its efforts to prevent falls, key steps include:

- Bring together the range of health care staff who can contribute to fall prevention, including doctors, nurses, physical therapists, managers, pharmacists, and housekeeping staff.
- Make best possible use of locally collected data on falls to ensure that efforts are concentrated on the times, places, and causes of falls most relevant to their own hospital.
- Review policy and practice in light of the current evidence base.
- Focus initially on a highly vulnerable patient group—e.g., those admitted with stroke or fractured femoral neck—and spread the interventions to less vulnerable groups after they have been honed.
- Concentrate implementation strategies and measurement of compliance on interventions and outcomes rather than assessment.

Falls in hospital patients tend to have multiple and complex causes, so we should not be surprised that our efforts to reduce harm need to be multiple and sustained. The scale of the challenge can perhaps best be faced by setting aside the question, "How do we prevent patients from falling?" and instead repeatedly asking ourselves, "How can I prevent *this patient* from falling?"

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