Lifelong Learning

CPD ARTICLE NUMBER FOUR

Preventing Falls and Fall-related Injury in Older People:

How GPs can Help

Falls and fall-related injury are common in older people, with some events having a direct impact on the person's ability to function and live independently. There is good evidence that falls and fall-related injury can be prevented, and GPs have a key role in screening, assessment and implementing effective intervention strategies.

The size of the problem

Falls are the leading cause of injury-related hospitalisation and injury-related death in people 65 and older. In a study undertaken in New South Wales, Australia, it was shown that 17% of all presentations of older people to the emergency department were fall-related and, of these, about 50% were admitted to hospital.[1] Falls are also the most common reason why an older person calls for an emergency ambulance and the most frequently cited reason for admission to residential aged care. A fall may be a manifestation of acute or chronic underlying pathology or an unintended event resulting from the interaction of a person with his or her surrounds (such as tripping on a pavement).

There is a wealth of literature[2] regarding the most effective strategies that can be used to prevent falls and injury. However, despite this, a large number of older people at risk of falls are not being appropriately assessed or offered interventions to minimise risk.

About the author

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Case scenario

Mrs A, aged 78, has been brought to the emergency department by ambulance, having tripped on a tree root while out shopping. She has sustained a left distal forearm fracture, which is reduced and then put in a back slab pending outpatient orthopaedic review. Mrs A's husband is willing and able to help her with both domestic and personal care while her arm is out of action and so she is discharged from the emergency department with simple analgesia and told to see her GP for further assessment of falls and fracture risk.

What can the GP do?

Since Mrs A has fallen and sustained a fracture, it is not necessary to screen her for falls risk. Instead, an assessment looking for modifiable risk factors and tailored intervention is required.

How to identify who is at risk of falls

Screening is a process that aims to identify people at increased risk of falls. It does not necessarily show why someone is at risk of falls. It should be a simple and quick process. For busy GPs, the simplest screen to use in older people is to ask them whether they have fallen two or more times in the past year or have sustained a significant injury from a fall.

There is a multitude of other screening tests available, but the reality is that few have been properly evaluated for reliability and predictive validity. Anecdotal information about them suggests that GP uptake is poor.

Key points

- GPs have a key role in screening and assessment of the risk for falls in older people.
- GPs have direct responsibility for medication use and the prescription of drugs that both increase and decrease risk of falls and fractures.
- Medications to be avoided in the older person where possible are the centrally acting medications, especially sedative hypnotics, antidepressants, antipsychotics and opiate-containing analgesics.
- Exercises that challenge balance are important for falls prevention and must be undertaken continually. The benefits of appropriate exercise should be conveyed to patients, particularly those who have chronic diseases for which different approaches to exercise are required.
- Residents in residential aged care should be seen as having a high risk of falls. At a very minimum, all residents should be vitamin D replete. Several additional strategies can be used to reduce both falls and fracture risk.

Clinical Falls Risk Assessment Form and Tests

Clinical Falls Risk Assessment Form

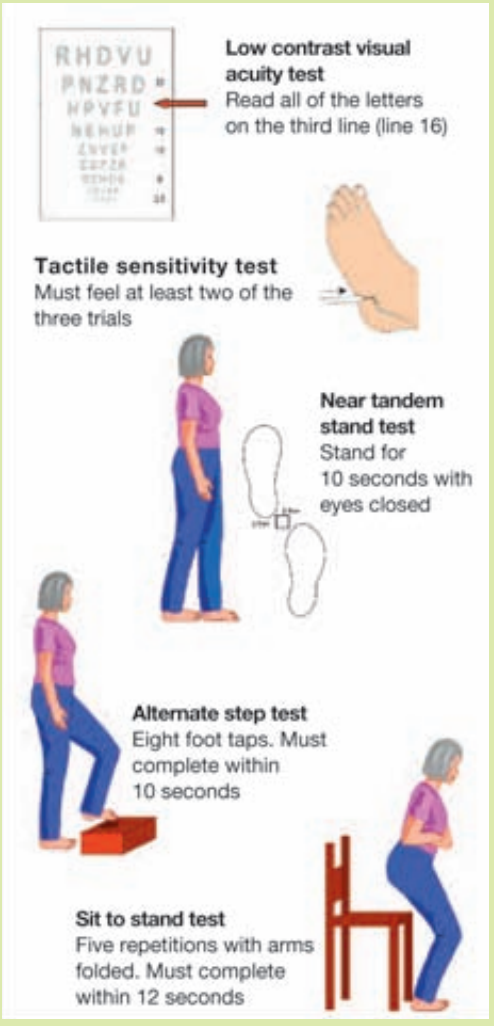
NAME_____ DATE_____

For the following risk factors, score **'YES'** *if risk factor is present, score* **'No'** *if it is not.*

MEASURE	RISK FACTOR PRESENT (Please circle)		ACTION
Previous falls			
One/more in previous year	Yes/No		
Medications			
Four or more (excluding vitamins)	Yes/No		
Any psychotropic	Yes/No		
Recommendation: Review current medications			
Vision			
Low contrast visual acuity test Unable to see all of line 16	Yes/No		
Recommendation: Give vision information sheet. Examine for gluacoma, cataracts and suitability of spectacles. Refer if necessary.			
Peripheral Sensation			
Tactile sensitivity test Unable to feel 2 out of 3 trials	Yes/No		
Recommendation: Give sensation loss information sheet. Check for diabetes.			
Strength/Reaction Time/Balance		**Time (secs)**	
Near tandem stand test Unable to stand for 10 secs	Yes/No		
Alternate step test Unable to complete in 10 secs	Yes/No		
Sit to stand test Unable to complete in 12 secs	Yes/No		
Recommendation: Give strength/balance information sheet. Refer to community class or home exercise programme if appropriate to individual level of functioning.			

Number of risk factors	0-1	2-3	4-5	6+
Probability of falling	7%	13%	27%	49%

Probability Score: The patient has _____% probabilty of falling in the next 12 months.



How best to identify risk factors for falls

The purpose of assessment is primarily to identify modifiable risk factors for falls and fractures and then to implement effective intervention strategies based on the risk factors identified. The process needs to be systematic and so it is advisable to use a validated assessment battery, like the one on this page.

It allows the clinician to estimate the level of increased fall risk and determine which sensorimotor systems are impaired. It consists of measures that include information on previous falls, medication use, vision, peripheral sensation, lower limb strength, balance and co-ordination. The test takes approximately 10 minutes to perform and allows for assessment to be clearly linked to intervention.

Case continued

The practice nurse assessed Mrs A and identified several risk factors that required further consideration. Mrs A was taking several medications for a number of underlying comorbidities. Her medications included an antidepressant and sedative hypnotic. The practice nurse also noted that Mrs A wore bifocal glasses and that her balance was poor when tested.

Who does what with the information?

GPs have a key role in both identifying and addressing a number of risk factors for falls in older people. Some interventions clearly sit within the realm of the GP, whereas others may require referral to other health care professionals. The older person must be an engaged and active participant in the suggested recommendations. Table 1 highlights several of the more commonly identified risk factors for falls with suggested interventions.

Review of medications

Probably the most important role of the GP in falls and fracture prevention lies in stopping the bad medications and starting the good medications. There is a consistent body of literature linking centrally acting medications – sedative hypnotics, anti-depressants, antipsy-

chotics and opiate-containing analgesic agents – with an increased risk of falls and fractures. Sedative hypnotic use is also linked with motor vehicle accidents and, more recently, has been shown to be associated with an increased mortality and cancer risk.[3] Clearly, some people have justifiable clinical indications for some of these medications, but ongoing need should be reviewed regularly.

In addition, abrupt withdrawal of any of these medications is contraindicated and many would see withdrawal as a futile exercise unless the older person is a willing participant and has a full understanding of the nature of the risk of using such medication. Hospitals also have a responsibility for reducing the use of sedative hypnotics. Figure 1 shows the results of a sustained training, education and support programme aimed at reducing in-patient falls and which included targeted teaching around the risks of sleeping tablet use at a large metropolitan teaching hospital in Sydney.

In addition to stopping older patients from taking harmful medications, doctors have a requirement to ensure that people are taking medications from which they stand to benefit. Many older people are vitamin D deficient from a combination of limited sunlight exposure and a reduced ability to synthesise vitamin D in the skin. Vitamin D receptors are found on muscle (including cardiac myocytes) and nervous tissue, and there is evidence that vitamin D replacement to achieve serum levels more than 50nmol/L can reduce falls in older people. Low levels of vitamin D are also associated with increased risk of cardiac events and certain malignancies,[3] so there are multiple reasons to ensure that people are vitamin D replete.

Both vitamin D and calcium are essential for bone health, and when dietary intake is insufficient, these should be supplemented. However, neither are mainstay treatments for osteoporosis and all too often people who fall and fracture are not offered evidence-based treatments for osteoporosis.[5]

There is no requirement to undertake a bone mineral density (BMD) scanning in an older person who has sustained a low trauma fracture. Several treatment options exist for osteoporosis, and these should be considered in any older person with a low trauma fracture or at high risk of fracture (eg, people taking high doses of corticosteroids). These are detailed in Table 2.

TABLE 1

Examples of linking assessment to evidence-based interventions

Risk factor	Intervention
Medication	Stop any CNS medication unless ongoing clinical indication. Ensure calcium and vitamin D intake is sufficient. If not, consider supplementation. Aim for serum vitamin D level >50nmol/L. Offer treatment for osteoporosis for any older person sustaining a fracture from standing height unless there is a clinical contraindication to all the therapies available. Refer for home medication review if concerns about management of medications.
Vision	If cataracts are causing impaired vision, refer for extraction. If using bifocal or multifocal glasses – recommend use of a separate pair of single lens glasses for use outdoors.
Impaired balance or mobility	Consider home or group-training based programme for strength and balance training. Ensure any underlying cause for impaired balance and mobility is addressed where possible – eg, vitamin D deficiency, vitamin B12 deficiency, CNS medication use, pain, etc.
Syncope/dizziness	Check lying and standing blood pressure. Review any medications contributing to orthostatic hypotension. Consider Epley manoeuvre if dizziness thought to relate to benign paroxysmal positional vertigo. Refer if unexplained dizziness and/or syncope.
Painful feet	Treat pain and consider referral to podiatrist for provision of ankle strengthening and mobility exercises.
Cognition	Document cognitive performance using a simple tool – eg, GPCog, AMTS or MMSE. Consider the impact of any cognitive deficits on ability to engage in an intervention.
Environment	Refer to occupational therapist for modification of the home environment, with provision of support and advice regarding safety within and outside the home for those at highest risk of fall.

ABBREVIATIONS: AMTS = abbreviated mental test score; CNS = central nervous system; GPCog = general practitioner assessment of cognition; MMSE = mini-mental state examination.

Review of use of bifocal or multifocal glasses

The use of bifocal and multifocal glasses has been shown to increase the risk of falls and evidence exists to support people using single lens glasses for outdoor mobility. Wearing bifocal or multifocal glasses is particularly hazardous during stair descent, where the varying focal lengths can lead to inaccurate foot placement.

Many older people when told about the hazards of wearing bifocal and multifocal glasses outdoors will respond by telling the practitioner that they have been wearing them for years. Although true, what will have changed over the years are basic physiological measures of strength, balance and reaction time, which have a direct impact on the ability to respond to a sudden and unexpected challenge to remaining upright.

Assessment of postural hypotension

Postural hypotension and associated symptoms are often related to the use of antihypertensives and other cardiac medications. Postural hypotension should be properly assessed with the

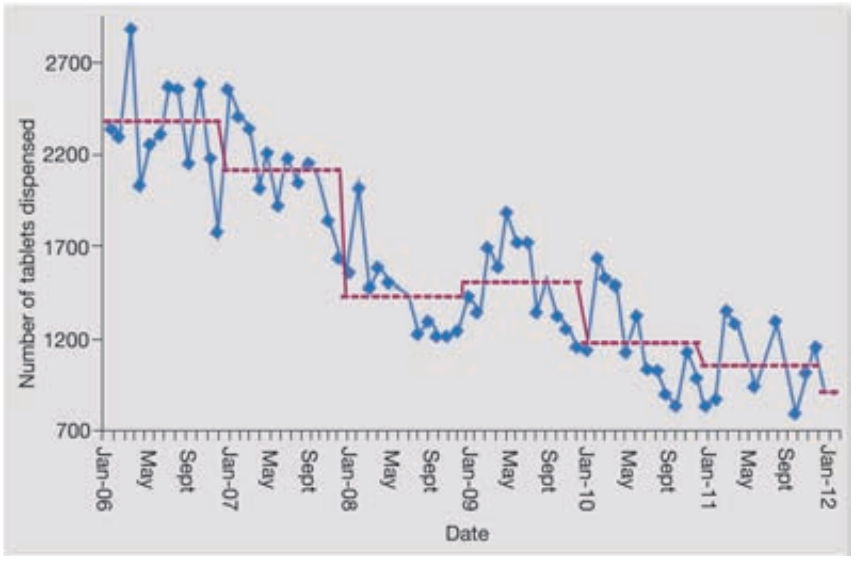


Figure 1. Reduction in sedative hypnotic use occurring over time in a large metropolitan teaching hospital in Sydney following the introduction of a sustained training, education and support programme aimed at reducing in-patient falls. Graph shows the total number of sedative tablets dispensed in all medical and surgical wards between January 2006 and January 2012 [unpublished data].

person lying supine for five minutes and then on standing at one and three minutes. Any changes in pulse and blood pressure should be correlated with symptoms.

When choosing which medications to stop in patients with postural hypotension, most doctors with expertise in the area would recommend stopping peripheral vasodilators and volume-depleting agents if clinically appropriate. In some older people who still have symptomatic postural hypotension despite modifying medications and using standard non-pharmacological treatments, the use of fludrocortisone is required. Fludrocortisone can be helpful but has the main side effect of causing peripheral oedema.

Referral by the GP

As the primary provider of care on an ongoing basis, GPs are in the privileged position of being able to influence the health decisions of their patients. Therefore, in regard to falls prevention it is critical that the GP is proactive in referring older people to evidence-based treatments to minimise falls risk.

Exercise is probably the single most important intervention a person can undertake to reduce the risk of falls and fall-related injury. However, the exercise needs to challenge balance specifically and preferably improve strength. It also needs to be sustained. Simply advising someone to walk is not an evidence-based approach and, in those with poor balance, may actually increase risk of falling.

Examples of evidence-based exercise interventions include the Otago exercise programme (a progressive exercise programme that includes strengthening and balance exercises) and Tai Chi (Figure 2), both of which can be undertaken on a one-to-one basis or in a group setting, depending on patient preference and availability of services locally.

More recent evidence has emerged on the importance of good foot care and footwear. Painful feet can increase falls risk and there is evidence to support podiatry intervention and the provision of specific ankle/foot exercises.[6]

Referral for other specialist input may be required and may include referral for:

- Cataract extraction.
- Occupational therapy home assessment.
- A home medication review (HMR) when there are particular concerns about compliance and ability to manage medications. In some areas, it will be possible to refer older people to a specialist falls clinic, although the availability of these services is highly variable.

Case continued

When the GP met Mrs A, they addressed a number of issues relating to her identified falls risk profile. This was done over a number of visits rather than overwhelming Mrs A with a large number of recommendations in one session.

The antidepressant and sedative hypnotic had been started a number of years ago after the death of Mrs A's daughter. It was agreed that Mrs A would reduce and then discontinue her antidepressant in the first instance and that this would be reviewed with the potential to slowly reduce and stop the sedative hypnotic.

Her use of bifocals was discussed and she was advised to use single lens glasses when outdoors. She was happy to make this change as she was aware of the distorted visual fields when attempting stair descent.

As her arm was still in a cast, she was reluctant to consider an exercise programme at this point but was happy to do so in the future.

The GP also discussed bone health with Mrs A. She already had sufficient calcium intake in her diet and was taking vitamin D supplements. She was also offered a choice of treatments for osteoporosis.

Preventing falls in nursing and residential aged care facilities

Falls and fall-related injury are more common in residential aged care facilities. It is arguable that there is no indication for screening in this population as all residents are likely to be at increased risk of falls. Interestingly, it should not be assumed that there is a linear relation between falls risk and degree of 'frailty' as those least likely to fall are those who are most 'frail' – ie, unable to transfer or mobilise themselves without assistance.

In this context, assessment should be linked to intervention and several approaches have been shown to be effective. There is evidence that vitamin D supplementation, a single and simple intervention, is beneficial in preventing falls in people living in residential aged care facilities, particularly in those with low serum levels of vitamin D (<50nmol/L).[7]

TABLE 2

Treatment options for older people with low trauma fracture

Treatment	Administration	Comments
Bisphosphonates	Can be given orally (alendronate and risedronate) weekly or monthly or Intravenously (zoledronic acid) annually for three years Avoid in people with impaired renal function (creatinine clearance <35 µmol/L) Check dentition and any requirement for dental work – rare association with osteonecrosis of the jaw Ensure people are calcium and vitamin D replete before administering treatment	For males and females
Strontium ranelate	Given orally daily Caution required if renal impairment	For females only
Raloxifene	Given orally daily. Caution required if renal impairment. Main concern relates to increased risk of venous thromboembolic disease	For females only
Teriparatide	Daily subcutaneous injection for 18 months	Specialist prescription only, or those who have failed on other treatments

Other effective interventions involve a multifaceted assessment of risk, including factors specific to the individual (cognition, physical function, medication use, hydration) and assessing how the person interacts with his or her surrounds (eg, distance to toilet or dining area, adequate lighting at night). People living in residential aged care settings are at high risk of fracture and, despite this, they are often the population least likely to be considered for treatment of osteoporosis.[8]

Limited evidence supports interventions to prevent falls in people with dementia but there is no reason to believe they would not achieve the same fracture reduction benefits from pharmacological treatment of their bone health. Clearly the decision to treat should be based individually and made in the context of the global health of an individual, including potential life expectancy.

Challenges to implementing the evidence

Despite the evidence supporting fall risk assessment and intervention, the literature suggests that assessment is not routinely undertaken and that people who could benefit from falls and fracture interventions are not receiving this level of care.[8]

The multifactorial nature of falls and the need to assess multiple domains and involve several health care professionals can seem overwhelming for both the patient and the person undertaking the initial screen or assessment. Time pressures are a reality for the GP and it may be necessary, and more appropriate, to address one risk factor at a time and review progress in subsequent consultations. Many older people do not openly embrace the need for ongoing specific targeted exercise. It is crucial that all health practitioners describe and prescribe exercise as a life-long activity with many health benefits, including falls and fracture prevention.

Figure 2. Tai Chi is an example of a suitable evidence-based exercise intervention to help reduce falls.

There is still limited evidence of effectiveness for fall prevention strategies in some high-risk populations, including people with dementia, Parkinson's disease, depression and stroke, although research is ongoing in all of these areas.

Conclusion

GPs can have a huge impact on an older person's risk of falls and fall-related injury. This in turn can have a dramatic effect on an older person's ability to function and live independently, and their quality of life. To date, and despite evidence and guidelines, there is limited evidence of systematic screening, assessment and intervention in many parts of the world. More work is required for a better understanding of the barriers to delivering effective falls prevention strategies in general practice and appropriate levels of support to implement best practice. The benefits are compelling for patients – fewer deaths, fewer fractures and fewer moves to residential care.

References are available on request