

Reducing falls in community dwelling elderly

The role of GP care planning

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BACKGROUND Falls in the elderly are common and often result in injury. A large body of evidence has identified the risk factors for falls, and indicates that strategies to prevent falls need to be targeted and multidisciplinary.

OBJECTIVE This article aims to present the epidemiology of falls in the elderly, discuss current knowledge of ways of approaching the problem, and using an evidence based approach, explore how general practitioners can identify elderly persons at risk of falls, and implement the use of a care planning model into general practice.

DISCUSSION General practitioners are well placed to identify patients at risk of a fall, and the new Enhanced Primary Care items for care planning provide opportunities to improve the way in which we manage these patients.

Falls in the elderly are common and often the first sign of frailty and other medical conditions. They may have serious consequences, result in an increased rate of institutionalisation, and represent an enormous cost to the community. A large body of evidence has identified the risk factors for, and likely causes of falls, and where opportunities for prevention may exist. In the community setting this knowledge has not yet been widely applied.

Epidemiology

Thirty percent of elderly people over 65 years of age living in their own homes will have a fall in any given year. The risk is even greater in older persons, with annual incidence rising to 50% in those over 80 years of age.¹ The actual incidence is likely to be even higher, given the degree of under reporting.^{2,3} In nursing homes the reported falls incidence is higher again due to the increased frailty of that population.⁴ There is some evidence that

in rural areas older people are at even greater risk of falls with reports of incidence rates up to 52%.⁵

Approximately 5–10% of falls result in a fracture, with one in five of these being a hip fracture.⁶ Falls are the leading cause of injury hospitalisation for elderly persons, and the most important cause of injury death.⁷ Over 1000 Australians die annually either directly or indirectly following a fall,⁸ and only half of all older persons hospitalised after a fall will be alive one year later.⁹ There are more subtle consequences of a fall including fear of falling,¹⁰ anxiety and depression,¹¹ and loss of confidence,¹² all of which lead to greater disability.

In 1996 it was estimated the cost to Australia from falls injuries in persons aged over 55 years was AUD2.5 billion.⁷ Moreover, it is expected that the proportion of elderly people in our population will rise from 11.2% in 1990 to 20.4% in 2050.⁷ Therefore, we can anticipate an increasing falls burden.

Risk factors for falls

The evidence for risk factors for falling in community dwelling older people is derived from over 60 observational studies. These allow identification of those older people who are likely to fall; they also provide the basis for preventive studies.^{13–15} Potential causes are listed in Table 1.^{13–16} Those that are most commonly implicated in older persons living in their own homes are:

- a history of previous falls^{17–20}
- psychoactive medications^{21–25}
- cognitive or functional impairment^{26–28}
- environmental hazards^{29,30}
- balance and gait problems^{31–34}
- loss of muscle strength,³⁵ and
- impaired vision.³⁶

A history of one or more falls in the past 12 months consistently appears in the literature as a significant and independent risk factor for further falls.^{17–19} Kiely et al in 1998²⁰ estimate that a history of a fall confers a three-fold increased risk over the following 12 months.

Table 1. Risk factors for falls¹⁶

Sociodemographic

- Advanced age
- Home alone more than 16 hours per day
- Previous falls
- Female sex

Medical conditions

- Balance and gait problems
- Lower limb weakness
- Acute illness
- Multiple medical conditions
- Visual impairment
- Urinary incontinence
- Arthritis
- Parkinson disease
- Foot problems

Medication use

- Polypharmacy
- Psychoactive medications (especially sedatives)

Mental health

- Depression
- Cognitive impairment
- Anxiety

Environmental factors

- Home hazards
- Use of a cane or walker
- Restraint use

Lifestyle factors

- Leaves residence once per week or less
- Needs help with one or more activity of daily living
- Poor social network
- Under weight or malnutrition

Table 2. Environmental hazards²⁹

- Slippery surfaces
- Obstacles in traffic ways
- Poor illumination
- Floor mats
- Footwear
- Ladder/step ladder/chair used to climb
- Bath
- Uneven, broken or loose pathways
- Cords on floor, steps/stair railing

Similarly, the relationship between drug use and falls has been established.^{17,21-23} Persons taking psychotropic medications are estimated to be twice as likely to have a fall as those who are not.¹⁷ Benzodiazepines and antidepressants have most consistently been implicated.²⁴ Analgesics and antihypertensives are also important. The association of these medications with falls risk is biologically plausible, as they are likely to interfere with postural control and cognitive function. There is evidence that taking four or more drugs of any type is associated with falls.²⁵

Cognitive impairment alone has been found to be a risk factor for falls.²⁶ It is often associated with agitation, gait and mobility problems, and with difficulty in performing everyday activities (eg. dressing, grooming). The need for assistance with one or more activities of daily living is an easily identifiable risk for a fall.^{27,28}

Most falls in the elderly occur in and

around the home, although falls in public places cannot be ignored. Environmental factors contributing to falls have not been investigated as rigorously as intrinsic factors have. Nevertheless, there seems to be consensus that environmental hazards are important. A review of 26 relevant studies performed by Clemson et al²⁹ identified the most important of these, as shown in Table 2. According to Thompson³⁰ simple home modifications can reduce the risk of falling by more than half.

Falls risk screening and assessment

A number of falls risk screening and assessment tools have been developed, most focussing on the hospital or residential aged care facility setting. In the general practice setting, falls risk assessment needs to be simple and rapid, and should accurately predict those at risk of a fall. The high prevalence of falls in the elderly suggests that we may screen all older patients for falls, but the real value lies in identifying those at high risk, and those with risk factors which can be modified.

Cwikel et al, in 1998,³⁷ evaluated the use of an elderly fall screening test in a community primary care clinic. This simple tool (Table 3) was found to accurately predict falls, with 83% sensitivity and 69% specificity for a score of two or more. While there has been little other work on the validation of a falls assessment tool specifically for the general practice context, the literature does suggest a broad based approach to falls risk identification.³⁷⁻³⁹ The general practitioner should have a high index of suspicion of the risk of a fall in any older person, while recognising the importance of the risk factors identified in earlier discussion.

Drawing on the evidence of falls risk factors, and in view of the very high incidence of falls, I would suggest that any elderly person who meets any of the following criteria should be considered at high risk and undergo more thorough assessment:

Table 3. Elderly falls screening test³⁷

1. Self reported falls history	0=1=0/2+=1
2. Injury	0=no injury/1=injury
3. Frequency of 'near falls'	0=never/rarely 1=occasionally or frequently
4. Gait speed	0=greater than or equals 30 m/min 1=less than 30 m/min
5. Gait style	0=even, straight, feet clear 1=uneven, shuffling, wide base or unsteady

Table 4. Falls care plan

Current health needs	Goal	Planned actions/tasks	Service provider responsible
Recent falls Unstable gait Mobility aid	Prevent falls and fractures Safe mobility	Assess gait, balance and need for mobility aid Assess home	Physiotherapist Neurologist Occupational therapist Physician Geriatrician
Recent falls Poor balance or strength	Prevent falls and fractures Improve balance and strength	Assess balance and mobility Strength and balance exercises	Physiotherapist Neurologist Geriatrician
Medication risk for falls • sedatives • analgesic • psychotropic • cardiovascular • anti-Parkinsonian • 3 or more medications	Prevent falls and fractures Correct use of medication, with minimal side effects	Review medication/DMMR • compliance • adverse reactions • OTC medications • effects on gait and balance	Pharmacist
Chronic condition affecting balance and mobility, eg. • arthritis • Parkinson disease • dementia • diabetes • peripheral neuropathy • stroke • vestibular disorder	Optimal management to reduce falls and fractures	Regular review	Physician Geriatrician Rheumatologist Neurologist Endocrinologist Cardiologist
Sensory deficit • visual impairment • hearing impairment • somatosensory impairment	Improve and/or maintain • vision • hearing • sensation	Review every 6 months	Ophthalmologist Audiologist Neurologist Psychologist Neuropsychologist
Foot problems Problems with footwear	To minimise effect on balance and mobility	Annual assessment and review 6 monthly assessment and review	Podiatrist Occupational therapist
Poor nutrition Low BMI	To improve nutrition To maintain a healthy weight and healthy diet	Increase understanding of healthy eating Review diet/nutrition 6 monthly	Dietitian
Cognitive deficit	Maintain in own home Ensure safety	Assess and review Assistance in the home	Dementia clinic Geriatrician HACC service
Inactivity	To exercise for at least 30 minutes, most days of the week	To establish a regular exercise routine Reinforce activity	An exercise program of patient's choice Reinforced by GP Physiotherapist Home support
Fracture or history of fracture Osteoporosis	Prevent further fractures Maintain and improve bone density	Assess bone density	GP Endocrinologist

- presents with or has had a fall
- complains of or is observed to be unsteady, or
- has two or more risk factors, as outlined in Table 1.

Falls interventions: the evidence

Various interventions have been proposed to prevent falls in older people. The literature on falls interventions is difficult to interpret in any systematic way however, as different studies have looked at different populations, interventions have been used and described inconsistently, and different endpoints have been measured. Some studies have examined single, and others, multiple interventions.³⁸⁻⁴⁷

Perhaps the best summation of the body of evidence on falls interventions is that provided by the Guidelines for the prevention of falls in older persons,⁴⁰ developed jointly in 2001 by the American Geriatrics Society, British Geriatrics Society and American Academy of Orthopaedic Surgeons. This group performed a systematic review of the literature on falls interventions, seeking to find those studies which provided evidence of a calibre sufficient to base guideline development on.

In relation to community dwelling elders, this group found there was more evidence to support multifactorial interventions than single interventions. They state that multifactorial interventions should include: gait training, medication review, exercise programs (particularly those incorporating balance training), treatment of postural hypotension, environmental modification, and treatment of cardiovascular disorders. With respect to single interventions, only exercise programs, medication review and modification of the environment are of proven benefit.⁴⁰

Earlier studies^{38,21,41} had reached similar conclusions. In particular, that interventions need to address multiple and targeted risk factors.

The role of care planning

The adequate management of falls demands that the GP look beyond the immediate episode of falling or injury, to the predisposing conditions that led to the fall. This requires a holistic appraisal of the individual, with a focus on rehabilitation and preventive medicine, often difficult in a setting where time is limited. The Enhanced Primary Care (EPC) items for care planning now allow GPs to take a longitudinal, multidisciplinary approach to the care of these patients, an approach which is mandated by the evidence base. An example of the other providers who might appropriately be involved in the management of a person at risk of falls is given in the sample care plan (Table 4) and discussed below.

Assessment of environmental hazards

For every person at risk of a fall the home environment should be assessed, and this is best done by an occupational therapist. Hazards in and around the home can be identified and recommendations made to rectify them. Furnishings, floor coverings, and lighting are among the items that would be reviewed. Grab bars and hand rails may be installed. Risk taking behaviours may be observed and modified.

Mobility and exercise

Inquiry about physical activity and a simple assessment of mobility will direct the doctor as to whether referral to a physiotherapist is needed. Mobility aids may be needed and an exercise program should be tailored to the individual patient's ability and interest.

Targeted interventions

The GP can coordinate other, targeted interventions including review of medications, perhaps including a Domiciliary Medication Management Review, assessment of vision, investigation of dizziness, and appropriate referrals for the manage-

ment of other medical conditions. For the more complex patient, with multiple factors contributing to falls risk, referral to a multidisciplinary falls clinic may be the best way to coordinate the assessment process. Referral to the aged care assessment team for consideration of alternative accommodation may be necessary for those patients thought to be very unsafe in their own home.

The development of a multidisciplinary care plan allows the opportunity to identify problems and goals in collaboration with the patient and his or her carer. Often, maintaining independence and staying in one's own home is a primary goal for the older person, and minimising falls can be crucial to this. The care planning process facilitates coordination and communication with both the patient and other providers, and can improve compliance with the changes recommended. The care plan must be reviewed periodically, providing the opportunity to re-assess existing risk factors and identify new problems.

Conclusion

Falls in the elderly are a major public health problem. The evidence shows that a systematic approach to falls allows the definition of falls risk, and the prospects for prevention are promising. The GP is well placed to identify and, using the EPC items for care planning, coordinate the management of older persons at high risk of a fall.

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