



# Guidebook for Preventing Falls and Harm From Falls in Older People: Australian Residential Aged Care Facilities

*A Short Version of Preventing Falls and Harm From Falls in Older People:  
Best Practice Guidelines for Australian Residential Aged Care Facilities  
2009*



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ACSQHC was established in January 2006 by the Australian health ministers to lead and coordinate improvements in safety and quality in Australian health care.

Copies of this document and further information on the work of ACSQHC can be found at <http://www.safetyandquality.gov.au> or from the Office of the Australian Commission on Safety and Quality in Health Care on +61 2 9263 3633 or email to [mail@safetyandquality.gov.au](mailto:mail@safetyandquality.gov.au).

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The guidelines build on earlier work by the former Australian Council for Safety and Quality in Health Care and by Queensland Health.

The contributions of the national and international external quality reviewers and the Office of the Australian Commission on Safety and Quality in Health Care are also acknowledged.

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# Guidebook for Preventing Falls and Harm From Falls in Older People: Australian Residential Aged Care Facilities

## *A Short Version of Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Residential Aged Care Facilities*

The Australian Commission on Safety and Quality in Health Care (ACSQHC) has developed three separate falls prevention guidelines, with the help of older Australians, for older Australians:

- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Community Care 2009*
- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Hospitals 2009*
- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Residential Aged Care Facilities 2009.*

Collectively, the guidelines are referred to as the Falls Guidelines.

The Falls Guidelines are based on current and relevant literature. They identify principles of care and special considerations for culturally and linguistically diverse, Indigenous, and rural and remote groups. The Falls Guidelines use evidence based recommendations, good practice points, case studies and points of interest to facilitate understanding and promote implementation.

There is a need for further research to establish the effects of interventions on falls rates. Therefore, the Falls Guidelines recognise that the sound clinical judgment of informed professionals is best practice in situations where strong recommendations have not been made.

This abridged version of *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Residential Aged Care Facilities 2009* is designed as a quick reference tool, to guide clinical practice and to help residential aged care facilities to develop and implement practices to prevent falls and injuries from falls. The full guidelines for Australian residential aged care facilities are a more comprehensive resource and should be referred to when implementing a falls prevention program.

# Support resources

Other resources available from <http://www.safetyandquality.gov.au>:

- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Community Care 2009*
- *Guidebook for Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Community Care 2009*
- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Hospitals 2009*
- *Guidebook for Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Hospitals 2009*
- *Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Residential Aged Care Facilities 2009*
- *Implementation Guide for Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Hospitals and Residential Aged Care Facilities 2009*
- Fact sheets:
  - Falls facts for residents and carers
  - Falls facts for doctors
  - Falls facts for nurses
  - Falls facts for allied health professionals
  - Falls facts for support staff (cleaners, food services and transport staff)
  - Falls facts for health managers

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## Acronyms

<b>ACSOHC</b>	Australian Commission on Safety and Quality in Health Care
<b>ADL</b>	activities of daily living
<b>BPPV</b>	benign paroxysmal positional vertigo
<b>RACF</b>	residential aged care facility
<b>RMMR</b>	residential medication management review

# 1 Background



## Key messages of the guidelines

- Many falls can be prevented.
- Fall and injury prevention needs to be addressed at the point of care and from a multidisciplinary perspective.
- Managing many of the risk factors for falls (eg delirium or balance problems) will have wider benefits beyond merely falls prevention.
- Engaging older people themselves is an integral part of preventing falls and minimising harm from falls.
- Best practice in fall and injury prevention includes implementing standard falls prevention strategies, identifying fall risk and implementing targeted individualised strategies that are resourced adequately, and monitored and reviewed regularly.
- The consequences of falls resulting in minor or no injury are often neglected, but factors such as fear of falling and reduced activity level can profoundly affect function and quality of life, and increase the risk of seriously harmful falls.
- The most effective approach to falls prevention is likely to be one that includes all hospital staff engaged in a multifactorial falls prevention program.
- At a strategic level, there will be a time lag between investment in a falls prevention program and improvements in outcome measures.

## 1.1 What is a fall?

The World Health Organization defines a *fall* as 'an event that results in a person coming to rest inadvertently on the ground or floor or other lower level'.<sup>†</sup>

An *injurious fall* is a fall that causes a fracture to the limbs or hip and shoulders, or one that causes a traumatic brain injury.

<sup>†</sup> [http://www.who.int/violence\\_injury\\_prevention/other\\_injury/falls/links/en/index.html](http://www.who.int/violence_injury_prevention/other_injury/falls/links/en/index.html)

## 1.2 What is an intervention?

An *intervention* is a therapeutic procedure or treatment strategy designed to cure, alleviate or improve a certain condition. Interventions can be in the form of medication, surgery, early detection (screening), dietary supplements, education or minimisation of risk factors.

In falls prevention, interventions can be:

- targeted at single risk factors – *single interventions*
- targeted at multiple risk factors
  - *multiple interventions* – where everyone receives the same, fixed combination of interventions
  - *multifactorial interventions* – where people receive multiple interventions, but the combination of these interventions is tailored to the individual, based on an individual assessment.

## 1.3 Development of the Falls Guidelines

The Falls Guidelines were developed by a multidisciplinary expert panel (the Falls Guidelines Review Expert Advisory Group). Whenever necessary, the expert panel accessed resources outside its membership. An additional external quality reviewer was appointed to review the guidelines from an Australian perspective.

The Falls Guidelines also drew on the following sources of information:

- the previous version of the guidelines
- a search of the most recent literature for each risk factor or intervention (see Section 1.3.1)
- the most recent Cochrane review of falls prevention interventions in the residential aged care facility setting
- feedback from health professionals and policy staff implementing the previous guidelines
- clinical advice from the expert advisory group
- guidance from external expert reviewers
- guidance from international external expert reviewers
- guidance from specialist groups (such as the Royal Australian College of General Practitioners, Australian Association of Gerontology, and Continence Foundation of Australia).



### 1.3.1 Levels of evidence

Papers that were retrieved from the literature review were classified using the National Health and Medical Research Council's six-point rating system. This system identifies the strength of evidence based on the specific methods used in the paper.

**Table 1.1 National Health and Medical Research Council levels of evidence**

Level	Description
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test, or pretest and post-test

Source: NHMRC<sup>1</sup>



## Evidence based recommendations

- Evidence based recommendations are presented in boxes at the start of each section, accompanied by references. They were selected based on the best evidence and accepted by the project's expert advisory group and external quality reviewers.
- Where possible, separate recommendations for assessment and interventions are given. Assessment recommendations have been developed by the expert group based on current practice and a review of the literature discussed in the text of each section.
- Intervention recommendations are based on a review of the research on the use of the intervention. Each recommendation is accompanied by a reference to the highest quality study upon which it is based, as well as a level of evidence.

Recommendations based on evidence nearer the **I** end of the scale should be implemented, whereas recommendations based on evidence nearer the **IV** end of the scale should be considered for implementation on a case-by-case basis, taking into account the individual circumstances of the older person.

The highest level of evidence for an intervention is reported regardless of the setting; however, when the research setting is not a residential aged care facility, an \* is added to the level (eg Level I-\*). This shows that caution is needed when applying that recommendation to the residential aged care facility setting.



## Good practice points

- Good practice points have been developed for practice where there have not been any studies; for example, where there are no studies assessing a particular intervention, or where there are no studies specific to a particular setting. In these cases, good practice is based on clinical experience or expert consensus.



## Point of interest

These boxes indicate points of interest. Most points of interest were revealed by the Australia-wide consultation process or from grey literature (conference proceedings, etc).



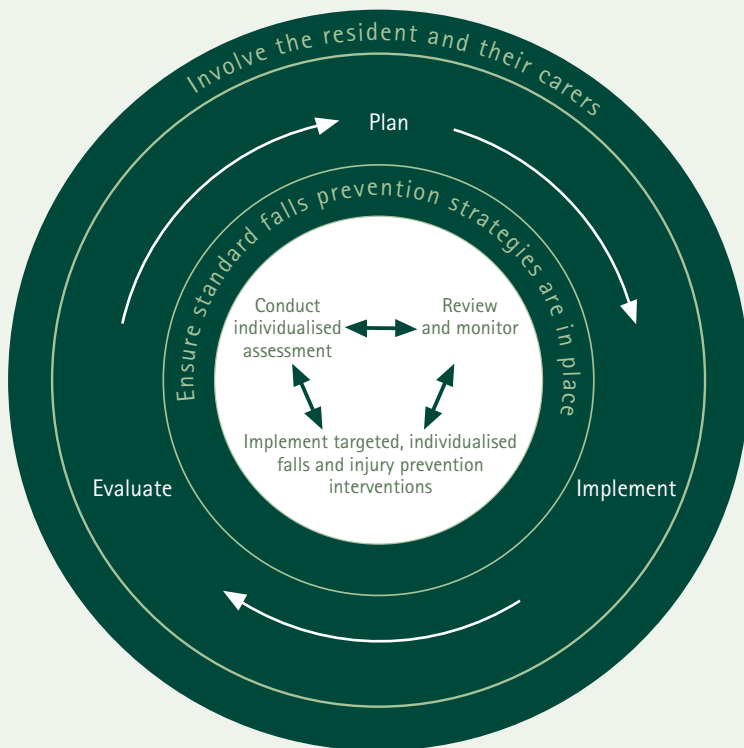
## Case study

These boxes indicate case studies. These case studies provide information on likely scenarios, which are used as illustrative examples.

## 1.4 How to use the guidelines

This quick reference guide is intended for use as a supplementary resource to the Falls Guidelines. Figure 1.1 illustrates how to use the guidelines to prevent falls and falls injuries. Involvement of the resident and their carers is necessary at all stages.

At a strategic level, a falls prevention program needs planning, implementation and evaluation, as represented by the outer circle in Figure 1.1. The inner circle represents standard falls prevention strategies that are implemented at the individual or point-of-care level (see Parts B–D of the Falls Guidelines). Individualised assessment, targeted and individualised interventions, and continuous review and monitoring are recommended (see Chapters 4 and 5 of the Falls Guidelines).



## Plan

### Plan for implementation

- Step 1: Identify teams
- Step 2: Identify, consult, analyse and engage key stakeholders
- Step 3: Assess organisational readiness
- Step 4: Analyse falls

### Plan for evaluation

- Step 5: Establish a baseline

### Plan for quality improvement

- Step 6: Review current clinical practice

## Implement

- Step 7: Decide on implementation approaches
- Step 8: Determine process for implementation
- Step 9: Conduct trial
- Step 10: Learn from trial
- Step 11: Proceed to widespread implementation for improvement
- Step 12: Sustain implementation

## Evaluate

- Step 13: Measure process
- Step 14: Measure outcomes
- Step 15: Report and respond to results

**Figure 1.1 Using the guidelines to prevent falls and falls injuries in Australia**





## 2 Involving the resident and their carers



### Good practice point

- Consumer participation in health is central to high-quality and accountable health services. It also encourages shared responsibility in health care. Consumers can help facilitate change in health care practices.

Health care professionals and care staff should consider the following to encourage residents to participate in falls prevention:

- Make sure the falls prevention message is presented within the context of staying independent for longer.<sup>2</sup>
- Be aware that the term 'falls prevention' could be unfamiliar and the concept difficult to understand for many residents in this older age group.<sup>2</sup>
- Provide relevant and usable information to allow residents and their carers to take part in discussions and decisions about preventing falls<sup>3</sup> (see the fact sheets on preventing falls).
- Find out what changes the resident is willing to make to prevent falls, so that appropriate and acceptable recommendations can be made.<sup>3</sup>
- Offer information in languages other than English where appropriate;<sup>3</sup> however, do not assume literacy in their native language.
- Explore the potential barriers that may prevent residents from taking action to reduce falls (such as low self-efficacy and fear of falling) and support residents to overcome these barriers.<sup>3</sup>
- Develop falls prevention programs that are flexible enough to accommodate the resident's needs, circumstances and interests.<sup>3</sup>
- Place falls prevention posters in the residential aged care facility and in common areas used by residents and family members.
- Ask family members to assist in falls prevention strategies.
- Trial a range of interventions with the resident.<sup>4</sup>





## 3 Standard falls prevention strategies

### 3.1 Falls prevention interventions



#### Recommendations

##### *Intervention*

- A multifactorial approach using standard falls prevention interventions should be routine care for all residents of residential aged care facilities. (Level I)<sup>5</sup>
- In addition to a multifactorial approach using standard falls prevention interventions, develop and implement a targeted and individualised falls prevention plan of care based on the findings of a falls screen or assessment. (Level II)<sup>6</sup>
- Provide vitamin D with calcium supplementation to residents with low blood levels of vitamin D, because it works as a single intervention to prevent falls. (Level I)<sup>5</sup>
- Residents should have their medications reviewed by a pharmacist. (Level II)<sup>7</sup>

#### 3.1.1 *Choosing multifactorial interventions*

All residential aged care facility (RACF) staff members (including support, clinical, administrative and managerial staff), as well as the resident and their carers (where appropriate), have a role to play in falls prevention, as outlined below.

Multifactorial interventions have been the most studied form of falls prevention strategies for residential aged care. Key components from the successful trials included:

- multidisciplinary team interventions<sup>6,8</sup>
- comprehensive geriatric assessment<sup>6,9</sup>
- staff education<sup>6,8</sup>
- balance exercises
- medication review
- environmental adaptations
- hip protectors (for preventing hip fractures)
- post-fall management.

As with interventions in hospitals,<sup>10</sup> there is perhaps a necessity for intensive and sustained falls prevention programs with a focus on cognitive impairment and a whole-system approach to facility-based falls prevention (with associated work practice change) led by facility staff. Ongoing evaluation of prevention strategies with monitoring of falls using standard definitions is crucial for determining the effectiveness of prevention strategies.

### 3.1.2 Choosing single interventions

Some interventions used in multifactorial interventions have prevented falls and fractures as single interventions. These include:

- medication review<sup>7</sup>
- vitamin D with calcium supplementation in people with low blood levels of vitamin D (to prevent falls and fractures)<sup>5,11-13</sup>
- hip protectors (to reduce hip fractures).<sup>14</sup>



#### **Multifactorial case study: decreasing the number of risk factors can reduce the risk of falling<sup>15</sup>**

Mrs R is a 79-year-old woman who was transferred by ambulance to hospital from her residential aged care facility (RACF) after fracturing her left inferior pubic ramus (pelvis). This injury was the result of a fall onto the floor while she was rushing to the toilet.

The orthopaedic team admitted Mrs R from the emergency department and, because the fracture was stable, they decided that she would be allowed to walk and weight bear as pain permitted. From the outset, nursing staff implemented standard strategies for falls prevention and, because Mrs R was admitted as the result of a fall, staff completed a falls risk assessment rather than a less detailed falls risk screen.

Information from the falls risk assessment and the accompanying transfer letter from Mrs R's RACF revealed that she had multiple risk factors for falling, which included that she:

- is older than 65 years
- has fallen three times in the previous year
- is taking five different medications, including a sleeping tablet and diuretic
- on last attempt (a month previously), was only able to complete the Timed Up and Go Test (TUG) in 19 seconds with her wheelee walker, while the mean time for healthy 71–79-year-old people is 15 seconds<sup>16,17</sup>
- is frequently incontinent of urine at night and regularly rushes to the toilet

- had a Mini-Mental State Examination (MMSE) score of 22/30 before falling and was frequently agitated (a score of less than 24 indicates cognitive impairment)
- has left foot pain as the result of severe hallux valgus
- wears bifocal glasses for all activities, despite having a second pair of distance glasses for walking
- does not like to venture outdoors and receives no direct sunlight.

When Mrs R returned home to the RACF, in addition to standard falls prevention strategies and in response to the risk assessment, staff implemented targeted, individualised interventions to reduce Mrs R's risk of falling. These interventions included a medication review and advice by the medical officer on the importance of getting enough sunlight for vitamin D, advice from the occupational therapist about wearing well-fitting shoes with nonslip soles, and some simple exercises for strengthening core body muscles for better balance, demonstrated by the physiotherapist.

As a result of these multifactorial interventions, Mrs R:

- has a minimised risk of medication interactions and adverse medicine events
- has a more restful sleep due to physical exertion throughout the day
- has better management of her urinary incontinence
- experiences fewer episodes of agitation
- has less pain in her left foot from her hallux valgus
- is able to clearly see the floor in front of her while walking
- has improved the condition of her muscles and bones.

The health care teams at both the hospital and the RACF were all made aware of changes to Mrs R's care through chart entries, case conferences and appropriate discharge correspondence. Mrs R and her family were made aware of the changes to her care through a scheduled meeting with the health care team.

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## 3.2 Falls risk assessment

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### Recommendations

#### *Screening and assessment*

- If a falls risk screening process is used as a first step, rather than an assessment of all residents on admission, all residents should be screened as soon as practicable thereafter, then regularly (every six months) or when a change in functional status is evident.
  - Use separate screening tools for residents who can and cannot stand unaided.
  - The introduction of falls risk screens and assessments needs to be supported with education for staff and intermittent reviews to ensure appropriate and consistent use.
  - Screens and assessments will only be useful when supported by appropriate interventions related to the risks identified.
  - Identifying the presence of cognitive impairment should form part of the falls risk assessment process.
- 



### Good practice points

#### *Falls risk screening*

- Using a formal screening tool has the benefit of forming part of routine clinical management, and will inform further assessment and care for all residents.
- If a resident is identified as being 'at risk' for any item on a multiple risk factor screen, interventions should be considered for that risk factor even if the person has a low falls risk score overall.

#### *Falls risk assessment*

- Conduct falls risk assessments for residents who exceed the threshold of a falls risk screening tool, who suffer a fall, or who move to or reside in a setting where most people are considered to have a high risk of falls (eg high-care facilities, dementia units).
  - Interventions delivered as a result of the assessment provide benefit; therefore, it is essential that interventions systematically address the identified risk factors.
-

### 3.2.1 Organising a falls risk screen

Falls risk screening is a brief process of estimating a person's risk of falling and classifying people as being at either low or increased risk. Falls risk screening usually involves only reviewing up to five brief items. Although not designed as comprehensive assessments, positive screening on certain screen items can also provide information about intervention strategies. When a falls risk screen is introduced, it needs to be supported with education for staff and intermittent reviews to ensure appropriate and consistent use.

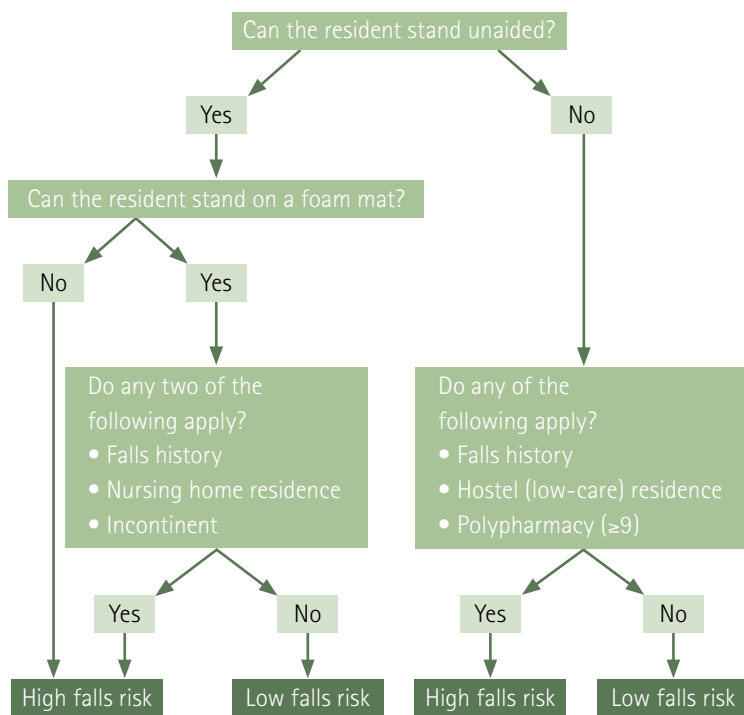
Most residents of RACFs have an increased risk of falling.<sup>6</sup> While some facilities may prefer to use a screening tool to identify those at increased risk who require a falls risk assessment, other facilities may decide to administer falls risk assessments for all residents.<sup>15</sup>

If an RACF is using a screening process as part of a multifactorial intervention to identify residents who need a falls risk assessment, rather than conducting a falls risk assessment on all residents, then:

- all older people who are admitted to RACFs should be screened for their falls risk, and this screening should be done as soon as practicable after they are admitted
- a falls risk screen should be undertaken regularly (every six months) and when a change in functional status is evident.

Falls risk screening can be done by a member of the multidisciplinary health care team who understands the process, and can administer the tool, interpret the results and make referrals where indicated. A resident's risk of falling can change quickly; therefore, a falls risk screen should be done when changes are noted in a resident's health or functional status, as well as when there is a change in environment. Additionally, a falls risk screen should be undertaken regularly (ie every six months).

In residents who can stand unaided, having either poor balance or two of the following risk factors – a previous fall, high level of care or urinary incontinence – increases the risk of falling threefold in the following six months (sensitivity = 73%, specificity = 55%). In residents who cannot stand unaided, having one of the following risk factors – a previous fall, low level of care or using nine or more medications – increases the risk of falling twofold (sensitivity = 87%, specificity = 29%). A separate screening test should be used for residents who cannot stand unaided.<sup>18</sup> Figure 3.1 is an algorithm for classifying the falls risk of RACF residents.



Source: Delbere<sup>18</sup>

**Figure 3.1 Algorithm summarising classification of residents as high or low falls risk**

The outcomes of the screen need to be documented, as well as discussed with the resident. When the threshold score of a screening tool is:

- *exceeded*, a falls risk assessment should be conducted as soon as practicable
- *not exceeded*, the person is considered at low risk of falling and standard falls prevention strategies apply.

If any item on a multiple risk factor screen is identified as being 'at risk', interventions should be considered for that risk factor – even if the resident has a low falls risk score overall. For example, if a resident can stand unaided, does not have a recent history of falls and is residing in a hostel (low-level care) care, but does have incontinence, this would place them at a low overall falls risk. However, a preventive approach would include assessment and implementation of an intervention to address the incontinence at this time.

### 3.2.2 *Organising a falls risk assessment*

Assessing falls risk in RACFs typically involves the use of multifactorial assessment tools that cover a wide range of falls risk factors.

When identifying the cause of a fall, it is also important to remember that most falls occur as a result of an interaction between intrinsic and extrinsic factors, and that multiple factors increase the risk of falls.<sup>19</sup> Many diseases that are more common in older people increase the risk of falls – mainly through impairing cognitive functioning and postural stability. Most assessment tools focus only on intrinsic falls risk factors, so a separate environmental assessment may be indicated to identify extrinsic falls risk factors.

Falls risk should be assessed for those people who exceed the threshold of a falls risk screening tool, who suffer a fall or who move to or reside in a setting where most people are considered to have a high risk of falls (eg dementia units).

Relatively few general falls risk assessment tools have been developed for use in RACFs. Validated tools should be used, rather than developing a new tool. The health care team should be careful if adapting an assessment tool to their particular setting, because this limits the applicability of any previous validation studies. When a falls risk assessment is introduced, it needs to be supported by education for staff and regular reviews to ensure its appropriate and consistent use.<sup>15</sup> Usually in the RACF setting, nursing staff are primarily responsible for completing falls risk assessments, and consulting with medical and other health care professionals as indicated and possible.

So far, there is no consensus on which falls risk factors should be included in a falls risk assessment tool. Table 3.1 summarises the Peninsula Health Falls Risk Assessment Tool (FRAT), which is useful for assessing falls risk because of its applicability to Australian health care facilities.

**Table 3.1 Peninsula Health Falls Risk Assessment Tool (FRAT)**

Description	FRAT has three sections: Part 1 – falls risk status, Part 2 – risk factor checklist and Part 3 – action plan. The complete tool (including the instructions for use) is a full falls risk assessment tool. However, Part 1 can be used as a falls risk screen.
Time needed	Approximately 15–20 minutes
Criterion	Medium risk: score of 12–15 High risk: score of 16–20

Source: Stapleton<sup>20</sup>

The outcomes of the falls risk assessment, together with the recommended strategies to address identified risk factors, need to be documented, as well as reported to other health care staff, and discussed with the resident and their carer(s) (where applicable). Assessment tools provide detailed information on the underlying deficits contributing to overall risk and should be linked to intervention and management. Interventions delivered as a result of the assessment provide benefit; therefore, it is essential that interventions to address the risks identified are applied systematically.



### Case study

Mr D, who lives in a low-level aged care facility, recently slipped and fell. He had substantial bruising, but no broken bones. As part of the facility's routine policy after a fall, a falls risk assessment was undertaken to determine if there were any risk factors contributing to this fall. This assessment documented that Mr D had recently started taking sleeping tablets, had increasing unsteadiness in his walking and balance, and had increasing frequency of incontinence. A review by the general practitioner resulted in trialling a nonmedication approach to improving sleep (including stopping afternoon naps and having his last coffee at lunchtime). The physiotherapist introduced a supervised exercise program to improve balance, and also provided Mr D with a walking stick to improve steadiness during walking. Finally, a continence assessment identified strategies to improve Mr D's continence, and these were implemented. Four months later, Mr D had regained his previous mobility and confidence, and had no further falls.



## 4 Management strategies for common falls risk factors

### 4.1 Balance and mobility limitations



#### Recommendations

##### *Intervention*

- Use supervised and individualised balance and gait exercises as part of a multifactorial intervention to reduce the risk of falls and fractures in residential aged care facility residents. (Level II)<sup>21</sup>
- Consider using gait, balance and functional coordination exercises as single interventions. (Level II)<sup>22,23</sup>



#### Good practice points

- Assessment tools can be used to:
  - quantify the extent of balance and mobility limitations and muscle weaknesses
  - guide exercise prescription
  - measure improvements in balance, mobility and strength
  - assess whether residents have a high risk of falling.
- Exercise should be supervised and delivered by appropriately trained personnel.

#### *4.1.1 Assessing balance and mobility limitations*

Many measurement tools have been developed to assess balance, mobility and strength in older residential aged care facility (RACF) residents; the choice of tool will depend on the time and equipment available.

Table 4.1 summarises a number of clinical assessment tools that may be helpful for measuring risk and assessing progress in residents.

The criteria and ratings are derived from people living in the community setting.

**Table 4.1 Clinical assessments for measuring balance, mobility and strength**

Balance	
Functional reach (FR) <sup>24</sup>	
Description	FR is a measure of balance and is the difference between a person's arm length and maximal forward reach, using a fixed base of support.  FR is a simple and easy-to-use clinical measure that has predictive validity in identifying recurrent falls.
Time needed	1–2 minutes
Criterion	≤6 inches: fourfold risk ≤10 inches: twofold risk
Rating	76% sensitivity; 34% specificity <sup>25</sup>

Mobility	
Six-Metre Walk Test (SMW) <sup>26</sup>	
Description	SMW measures a person's gait speed in seconds along a corridor (over a distance of six metres) at their normal walking speed.
Time needed	1–2 minutes
Criterion	6 seconds
Rating	50% sensitivity; 68% specificity <sup>26</sup>

Mobility	
Timed Up and Go Test (TUG) <sup>27</sup>	
Description	TUG measures the time taken for a person to rise from a chair, walk three metres at normal pace and with their usual assistive device, turn, return to the chair and sit down.
Time needed	1–2 minutes
Criterion	15 seconds
Rating	76% sensitivity; 34% specificity <sup>28</sup>

## Strength

**Sit-to-Stand Test (STS)<sup>29</sup>**

Description	STS is a measure of lower limb strength and is the time needed to stand from a seated position on a chair five consecutive times.
Time needed	1–2 minutes
Criterion	12 seconds
Rating	66% sensitivity; 55% specificity <sup>26</sup>

## Strength

**Spring balance<sup>30</sup>**

Description	As part of the Physiological Profile Assessment, the strength of three leg muscle groups (knee flexors and extensors and ankle dorsiflexors) is measured while participants are seated.  In each test, there are three trials and the greatest force is recorded.
Time needed	5 minutes
Criterion	Computer software program compares an individual's performance to a normative database compiled from population studies.
Rating	75% accuracy for predicting falls over a 12-month period in community and institutional settings; reliability coefficients within clinically expected range (0.5–0.7). <sup>30</sup>

## Composite scales

### Berg Balance Scale<sup>31</sup>

Description	The Berg Balance Scale is a 14-item scale designed to measure balance of the older person in a clinical setting with a maximum total score of 56 points (see <a href="http://www.chcr.brown.edu/geriatric_assessment_tool_kit.pdf">http://www.chcr.brown.edu/geriatric_assessment_tool_kit.pdf</a> ).
Time needed	15–20 minutes
Criterion	A score $\leq 20$ = high risk of falls A score $\leq 40$ = moderate risk of falls (potential ceiling effect with less frail people)
Rating	High reliability (R=0.97); low sensitivity – an 8-point change needed to reveal genuine changes in function. <sup>32</sup>

## Composite scales

### Tinetti Performance-Oriented Mobility Assessment Tool (POMA)<sup>33</sup>

Description	POMA measures a person's gait and balance. It is scored on the person's ability to perform specific tasks with a maximum total score of 28 points.
Time needed	10–15 minutes
Criterion	A score $< 19$ = high risk of falls A score $< 24$ = moderate risk of falls
Rating	High test-retest reliability for POMA-T and POMA-B (R=0.74–0.93), lower test-retest reliability for POMA-G (R=0.72–0.89). POMA-T sensitivity (62%) and specificity (66.1%) indicate poor accuracy in falls prediction. <sup>34,35</sup>

## Confidence and falls efficacy scale

### Falls Efficacy Scale International (FESI)<sup>36</sup>

Description	FESI provides information on the level of concern on a four-point scale (1 = not at all concerned to 4 = very concerned) across 16 activities of daily living (eg cleaning the house, simple shopping, walking on uneven surfaces).
Time needed	5 minutes
Criterion	A score $\leq 22$ = low to moderate level of concern A score $\geq 23$ = high level of concern <sup>18</sup>
Rating	High test-retest reliability (R=0.96) <sup>36</sup>

### Case study

Mr K is 88 years old and returned to his residential aged care facility after being in hospital for pneumonia. The hospital discharge summary noted that Mr K could no longer stand up from his bed without help. As part of a multifactorial falls prevention program, the physiotherapist reviewed his balance, mobility and strength, and designed a program of supervised exercises that could be carried out with the nursing staff or family. As a result, Mr K can now stand without help and is more stable when walking, and his family are more confident about helping him when required.



## 4.2 Cognitive impairment



### Recommendations

#### *Assessment*

- Residents with cognitive impairment should have other falls risk factors assessed.

#### *Intervention*

- Address identified falls risk factors as part of a multifactorial falls prevention program, and also consider injury minimisation strategies (such as hip protectors or vitamin D and calcium supplementation). (Level I)<sup>5</sup>



### Good practice points

- Address all reversible causes of acute or progressive cognitive decline.
- Residents presenting with an acute change in cognitive function should be assessed for delirium and the underlying cause of this change.
- Residents with gradual-onset, progressive cognitive impairment should undergo detailed assessment to determine diagnosis and, where possible, reversible causes of the cognitive decline. Reversible causes of acute or progressive cognitive decline should be treated.
- If a resident with cognitive impairment does fall, reassess their cognitive status, including presence of delirium (eg using the Confusion Assessment Method tool).
- Interventions shown to work in cognitively intact populations should not be withheld from cognitively impaired populations; however, interventions for people with cognitive impairment may need to be modified and supervised as appropriate.

### 4.2.1 Assessing cognitive impairment

Older people with cognitive impairment have an increased risk of falls, and risk factors for falls are more prevalent in older people with cognitive impairment than in people without cognitive impairment. Therefore, one of the most important initial steps in preventing falls in older people is to assess for cognitive impairment. This should include the following strategies:

- Check repeatedly and regularly for the presence of dementia or delirium and treat possible medical conditions that may contribute to an alteration in cognitive status. Rapid diagnosis and treatment of a delirium and its underlying precipitant (eg infection, dehydration, constipation, pain) are crucial.<sup>37</sup>

- Residents with a progressive decline in cognition should undergo detailed assessment to determine diagnosis and, where possible, treat reversible causes of the cognitive decline.<sup>38</sup>
- Residents with cognitive impairment should have falls risk factors assessed, as discussed in other chapters, and interventions offered to modify risk. Some interventions (eg exercise) require the resident to be able to follow instructions or comply with a program. Where there is doubt about a resident's ability to follow instructions safely, the health care team should conduct an individualised assessment and develop a falls prevention plan using the information from the assessment on their behalf.<sup>14</sup>
- Generally, in an RACF, the registered nurse is responsible for assessing the resident's cognitive status and can supervise the collection of information on which the assessment is based. This information can include baseline observations, urinalysis, changes in medication, pain, blood sugar level, constipation, dehydration, etc. Each RACF should have a delirium protocol for collecting this baseline information.

Many tools can be used to assess cognitive status, some of which are summarised in Table 4.2.

**Table 4.2 Tools for assessing cognitive status**

Psychogeriatric Assessment Scales (PAS) <sup>39</sup>	
Description	PAS assesses the clinical changes seen in dementia and depression. Three scales are derived from a face-to-face interview with the participant or resident (cognitive impairment, depression, stroke), and three scales are derived from a face-to-face interview with an informant, such as a carer (cognitive decline, behaviour change, stroke). The PAS is easy to administer and score and can be used by lay interviewers. The PAS-Cognitive Impairment Scale (PAS-CIS) must be completed for Australian Government funding under the Aged Care Funding Instrument. See <a href="http://www.mhri.edu.au/pas">http://www.mhri.edu.au/pas</a>
Time needed	20 minutes
Criterion	A score 0–3: no or minimal cognitive impairment A score 4–9: mild cognitive impairment A score 10–15: moderate cognitive impairment A score 16–21: severe cognitive impairment

Folstein Mini-Mental State Examination (MMSE)<sup>40</sup>

Description	<p>MMSE is a widely used method for assessing cognitive mental status.</p> <p>It is an 11-question measure that tests five areas of cognitive function: orientation, registration, attention and calculation, recall and language.</p> <p>The maximum score is 30.</p>
Time needed	5–10 minutes
Criterion	<p>A score <math>\leq 23</math> indicates mild cognitive impairment</p> <p>A score <math>\leq 18</math> indicates severe cognitive impairment</p>

Rowland Universal Dementia Scale (RUDAS)<sup>41,42</sup>

Description	<p>RUDAS is a simple method for detecting cognitive impairment.</p> <p>RUDAS is valid across cultures, portable and administered easily by primary health care professionals.</p> <p>The test uses six items to assess multiple cognitive domains, including memory, praxis, language, judgment, drawing and body orientation.</p>
Time needed	10 minutes
Criterion	Cut-point of 23 (maximum score of 30)
Accuracy	89% sensitivity; 98% specificity



Confusion Assessment Method (CAM) <sup>43</sup>	
Description	CAM is a comprehensive assessment instrument that screens for four clinical features of delirium: <ul style="list-style-type: none"> <li>• an onset of mental status changes or a fluctuating course</li> <li>• inattention</li> <li>• disorganised thinking</li> <li>• an altered level of consciousness (ie other than alert).</li> </ul>
Time needed	5 minutes
Criterion	Resident is diagnosed as delirious if they have both the first two features, and either the third or fourth feature
Accuracy	94% sensitivity; 90% specificity <sup>44</sup>

#### 4.2.2 Providing interventions

Identified falls risk factors should be addressed as part of a multifactorial falls prevention program, and injury minimisation strategies (such as using hip protectors or vitamin D and calcium supplementation) could be instituted.

Other interventions that may also prevent falls (as part of a multifactorial program) include the following:

- Educate and discuss falls prevention risks and strategies with all staff<sup>6,8,45,46</sup> and residents.<sup>8</sup> Holding post-fall case conferences with staff can also be helpful.<sup>6</sup>
- Encourage all residents to participate in exercise classes to improve muscle strength, balance, gait, safe transfers and their use of walking aids.<sup>6,8,23</sup>
- Implement strategies to ensure that mobile residents can walk around safely, such as

- ensuring walking aids and other assistive devices are appropriate, and repairing them as needed<sup>6,45</sup>
- modifying the environment to maximise safety<sup>6,8,45</sup>
- being cautious when using hip protectors (some trials in nursing homes have found that hip protectors, if worn, prevent hip fractures;<sup>6,8</sup> however, poor adherence is a major issue limiting the effectiveness of this intervention).
- Review prescribed medications for conditions that the resident no longer has (eg antidepressants, antipsychotics, antihypertensives, antianginals).<sup>6,45</sup>
- Assess and develop a plan of care for people with urinary incontinence.<sup>23</sup>
- Treat orthostatic hypotension as required (orthostatic hypotension is common in residents with dementia).<sup>47</sup>
- Avoid using restraint or immobilising equipment (including indwelling catheters).<sup>14</sup>
- Provide supervision and assistance to ensure that residents with delirium or cognitive impairment who are not capable of standing and walking safely receive help with all transfers.<sup>47</sup>
- Use fall-alarm devices (sometimes called movement alarms) to alert staff that residents with cognitive impairment are attempting to mobilise.<sup>14</sup>

The symptoms of cognitive impairment and delirium should be managed by addressing agitation, wandering and impulsive behaviour as follows (note that these are general care principles and are not directly aimed at preventing falls):<sup>48,49</sup>

- Identify and reduce or eliminate the causes of agitation, wandering and residents' impulsive behaviour.
- Avoid the risk of dehydration by having fluids available and within a resident's reach, and by offering fluids regularly.
- Avoid extremes of sensory input (eg too much or too little light, too much or too little noise).
- Promote exercise and activity programs. Activity programming may need to be intensified in the late afternoon or early evening to redirect agitated behaviours (eg pacing may be redirected into walking or dancing; noises may be redirected into singing or playing music).
- Promote companionship if appropriate.
- Establish orientation programs using environmental cues and supports (including having personal or familiar items available). Repeat orientation and safety instructions on a regular basis, keeping instructions clear and consistent.

- Develop a schedule for the resident (eg regular eating times, regular activity times, regular toileting regime). Where possible, base this schedule on established individual routines. Make sure that staff know about the schedule so that procedures, routines and the resident's environment can be kept consistent.
- Encourage sleep without the use of medication, and promote and support uninterrupted sleep patterns by maintaining a bedtime routine, reducing noise and minimising disturbance.
- Encourage residents in activities that avoid excessive daytime napping.
- Ensure personal needs are met on a regular and timely basis.
- When communicating with cognitively impaired residents, try to instil feelings of trust, confidence and respect (thereby minimising the risk of an aggressive response). This can be achieved by approaching the resident slowly, calmly and from the front; respecting personal space; addressing the resident by name and introducing yourself; using eye contact (only if culturally appropriate); and speaking clearly. Gentle touch and gestures, as well as auditory, pictorial and visual cues used appropriately, may also help with communication. It is important that the resident understands what is being said; this can be helped by using repetition and paraphrasing, and allowing time for them to process the information.



### Point of interest: strategies for maintaining hydration in older people

Older people with cognitive impairment may become dehydrated easily, which can lead to delirium. An Australian study used strategies developed by the Joanna Briggs Institute Practical Application of Clinical Evidence System (JBI-PACES)<sup>50</sup> to maintain oral hydration in residents of residential aged care facilities.<sup>51</sup> Although adherence was problematic, the following strategies recommended by the JBI-PACES may be beneficial:

- Drinks (cordial, juice and water, but not caffeinated drinks) were offered by staff every 1.5 hours (as well as morning tea, afternoon tea and supper).
- Residents with cognitive impairment were either helped or prompted to drink.
- An accessible water fountain was set up with a supply of cups.
- Filled jugs of water were placed on all tables, with cups.
- Drinks were always given with medication.
- Icy poles, jellies and ice-cream were offered throughout the day as snacks and enjoyable treats.
- Fruit with a high water content (eg grapes, peeled mandarins) was placed on kitchen tables for easy access and picking.

- Light broths were given with meals.
  - Happy hour was introduced twice a week with nonalcoholic wines, mocktails, soft drinks and nibbles.
  - Warm milk drinks were given to help residents settle at night.
- 



### Case study

Mrs A is a 79-year-old resident of an aged care facility. She has been diagnosed with Alzheimer's disease. Mrs A was admitted to the facility recently when her family was no longer able to care for her at home. Mrs A often wanders off and gets lost in the facility. Staff have been instructed to repeat orientation and safety instructions on a regular basis, keeping instructions clear and consistent. The family was asked to bring some personal and familiar items from home to have in her room. Mrs A was vitamin D deficient and was given both calcium and vitamin D supplementation. Finally, to reduce her risk of suffering an injury, Mrs A was fitted with soft-shield hip protectors. Staff members are checking adherence with the hip protectors daily.

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## 4.3 Contenance

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### Recommendations

#### *Assessment*

- Older residents should be offered a continence assessment to check for problems that can be modified or prevented.

#### *Intervention*

- All residents should have a urinalysis to screen for urinary tract infections or function. (Level II-\*)<sup>52</sup>
- Regular, individualised toileting should be in place for residents at risk of falling, as part of multifactorial intervention. (Level II)<sup>23</sup>
- Managing problems associated with urinary tract function is effective as part of a multifactorial approach to care. (Level II-\*)<sup>52</sup>

Note: although there is observational evidence of an association between incontinence and falls, there is no direct evidence that interventions to manage incontinence affect the rate of falls.<sup>53</sup>

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### 4.3.1 Screening continence

Incontinence, urinary frequency and assisted toileting have been identified as risk factors for falls in RACFs.<sup>54</sup> Additionally, urinary incontinence has

been identified as a significant independent falls risk factor in residents who are not able to stand unaided.<sup>18</sup>

The cause of incontinence should be established through a thorough assessment. Older people may have more than one type of urinary incontinence, which can make assessment findings difficult to interpret.<sup>55</sup> The following strategies can be used to assess the resident's continence status:

- Obtain a continence history from the resident to help with assessment and diagnosis. This may include a bladder chart (a frequency/volume chart) or continence diary, which could be used to record continence for a minimum of two days. Sometimes a bowel assessment is required, and the resident's normal bowel habits and any significant change must be determined, because constipation can considerably affect bladder function.
- The suitability of diagnostic physical investigations should be addressed on an individual basis. Consent must be obtained from the resident before the physical examination, which should be done by a suitably qualified health professional.
- Post-void residuals should always be checked in incontinent residents.
- Falls risk factors related to incontinence need to be considered along with the symptoms and signs of bladder and bowel dysfunction.
- Functional considerations, such as reduced dexterity or mobility, can affect toileting, and should be assessed and addressed.
- Consideration should be given to the toilet environment itself; this includes accessibility (especially if the resident uses a walking aid), proximity, height and the number of household members using the same toilet.

### *4.3.2 Providing strategies to promote continence*

Appropriate management of incontinence may improve overall care. However, it is difficult to make strong recommendations, because specific continence-promotion strategies have not been part of successful falls prevention programs in the RACF setting.<sup>53</sup> A practical,

stepwise management approach for mobile and nonmobile residents, as well as residents with and without cognitive impairment, should be considered. Such an approach could be based on the United States Government recommendations about quality management of urinary incontinence in RACFs.<sup>56</sup>

The following strategies, adapted from those recommended by the Third International Consultation on Incontinence,<sup>57</sup> can be used to promote continence:

- Make sure the resident has access to a comprehensive and individualised continence assessment that identifies and treats reversible causes, including constipation and medication side effects.
- Use an adequate trial of conservative therapy as the first line of management.
- Establish treatment strategies as soon as incontinence has been diagnosed. The aim of managing urinary incontinence is to alter those factors causing incontinence and to improve the continence status of the resident. Management of incontinence is a multidisciplinary task that ideally involves doctors, nurse continence advisers, physiotherapists, occupational therapists and other suitably qualified health professionals and care staff.
- Address all comorbidities that can be modified.
- Encourage habit training, prompted voiding or timed voiding programs to help improve the resident's control over their toileting regime, and reduce the likelihood of incontinence episodes
  - timed voiding is characterised by a fixed schedule of toileting
  - habit retraining is based on identifying a pattern of voiding and tailoring the toileting schedule to the resident
  - prompted voiding aims to increase continence by increasing the resident's ability to assess their own continence status and to respond appropriately.

- Minimise environmental risk factors as follows
  - keep the pathway to the toilet obstacle free and leave a light on in the toilet at night
  - ensure the resident is wearing suitable clothes that can be easily removed or undone
  - recommend appropriate footwear to reduce slipping in urine
  - consider using a nonslip mat on the floor beside the bed for residents who experience incontinence on rising from the bed, particularly if on a noncarpeted floor in the bedroom (care must be taken when using mats to ensure the resident does not trip on the mat)
  - check the height of the toilet and the need for rails to help the resident when sitting and standing from the toilet (reduced range of motion in hip joints, which is common after total hip replacement or surgery for fractured neck of femur, might mean the height of the toilet seat should be raised).
- Where possible, consult a continence adviser if usual continence-management methods as described above are not working, or if the resident is keen to learn simple exercises to improve their bladder or bowel control. Some men are resistant to the idea of doing pelvic floor exercises. This should be recognised and the benefits explained.
- Consider the use of continence aids as a trial management strategy.



### Case study

Mr W lives in a low-care residential aged care facility. He cannot stand and adjust his clothes when going to the toilet without losing his balance and wetting his clothes. He cannot manage a urinal without having similar incidents. Staff implemented a toileting strategy where Mr W was prompted to go to the toilet every two hours and was changed if he was wet. This has resulted in no wet clothes and he now goes to the toilet safely. A detailed assessment and management of his continence is to be undertaken.

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## 4.4 Feet and footwear



### Recommendations

#### Assessment

- In addition to standard falls risk assessments, screen residents for ill-fitting or inappropriate footwear.

#### Intervention

- As part of a multifactorial intervention program, prevent falls by making sure residents have fitted footwear. (Level II)<sup>6</sup>



### Good practice points

- Include an assessment of foot problems and footwear as part of an individualised, multifactorial intervention for preventing falls in residents.
- Refer residents to a podiatrist for assessment and treatment of foot conditions as needed.
- Safe footwear characteristics include:
  - *soles*: shoes with thinner, firmer soles appear to improve foot position sense; a tread sole may further prevent slips on slippery surfaces
  - *heels*: a low, square heel improves stability
  - *collar*: shoes with a supporting collar improve stability.

### 4.4.1 Assessing feet and footwear

Footwear is a contributing factor to falls<sup>58</sup> and fractures in older people.<sup>59</sup>

RACF staff should arrange for the resident's feet and footwear to be assessed as part of pre-admission screening or upon admission. As part of a multifactorial falls prevention program, a health professional skilled in the assessment of feet and footwear, such as a podiatrist, should make this assessment – although a podiatrist will usually only make this assessment if the registered nurse has identified the need for a referral. The following components of the assessment are most relevant:

- *Footwear*: the safe shoe checklist is a reliable tool for evaluating specific shoe features that could potentially improve postural stability in residents.<sup>60</sup>
- *Foot problems*: staff should assess foot pain and other foot problems regularly. A resident with an undiagnosed peripheral neuropathy should be assessed for potentially reversible or modifiable causes of the neuropathy. Some of the more common causes of a peripheral neuropathy



include diabetes, vitamin B-12 deficiency, peripheral vascular disease, alcohol misuse and adverse effects of some drugs.<sup>61</sup>

- Refer the resident to a health professional skilled in the assessment of feet and footwear (eg a podiatrist) for additional investigations and management as required.<sup>62</sup>

A detailed assessment by a podiatrist for a fall-specific feet and footwear examination should include:<sup>63</sup>

- *fall history*: including foot pain and footwear
- *dermatological assessment*: skin and nail problems, infection
- *vascular assessment*: peripheral vascular status
- *neurological assessment*: proprioception; balance and stability; sensory, motor and autonomic function
- *biomechanical assessment*: posture, foot and lower limb joint range of motion testing and evaluation of foot deformity (eg hallux valgus – bunions), gait analysis
- *footwear assessment*: stability and balance features, prescription of footwear or footwear modifications, or foot orthoses based on assessment of gait in shoes
- *education*: foot care and footwear, link between footwear or foot problems and falls risk.

#### 4.4.2 Improving foot condition and footwear

All health care professionals can play an important role in:

- identifying ill-fitting or inappropriate footwear using the safe shoe checklist as a guide (see Figure 4.1)
- providing residents and carers (where appropriate) with information about footwear, as well as a shopping guide
- ensuring shoes are repaired when needed, and cleaned regularly
- recognising that residents who have a shuffling gait may be at higher risk of falling if they wear nonslip shoes on some carpeted floors
- ensuring that residents with urinary incontinence have dry, clean footwear
- ensuring residents have more than one pair of shoes in case shoes are soiled or damaged
- discouraging walking while wearing slippery socks and stockings
- discouraging the use of talcum powder, which may make floors slippery
- screening residents for foot pain or foot problems
- educating residents and carers (where appropriate) about basic foot care

- referring residents to a podiatrist for further assessment and management, as appropriate, if any of the following conditions or clinical signs are evident
  - foot pain
  - foot problems, such as swelling, arthritis, bunions, toe deformities, skin and nail problems (especially corns and calluses) or other foot abnormalities (eg collapsed arches or a high-arched foot)
  - conditions affecting balance, posture or proprioception in the lower limbs, such as diabetes, peripheral neuropathy or peripheral vascular disease
  - unsteady or abnormal gait
  - inappropriate or ill-fitting footwear, or a requirement for foot orthoses.

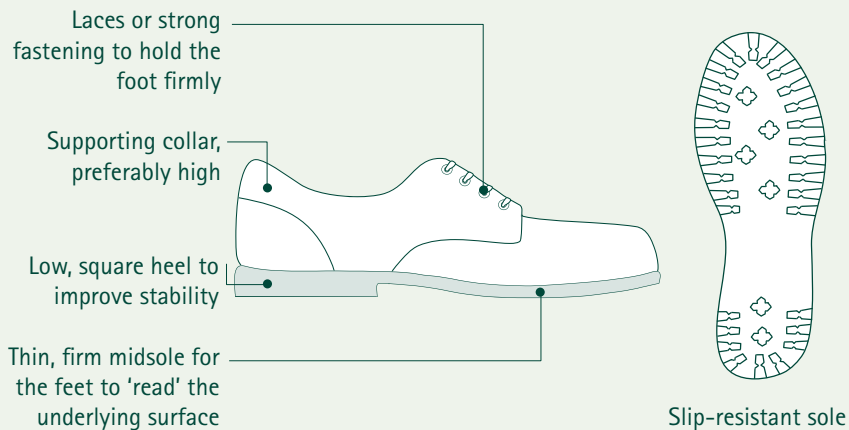


### Case study

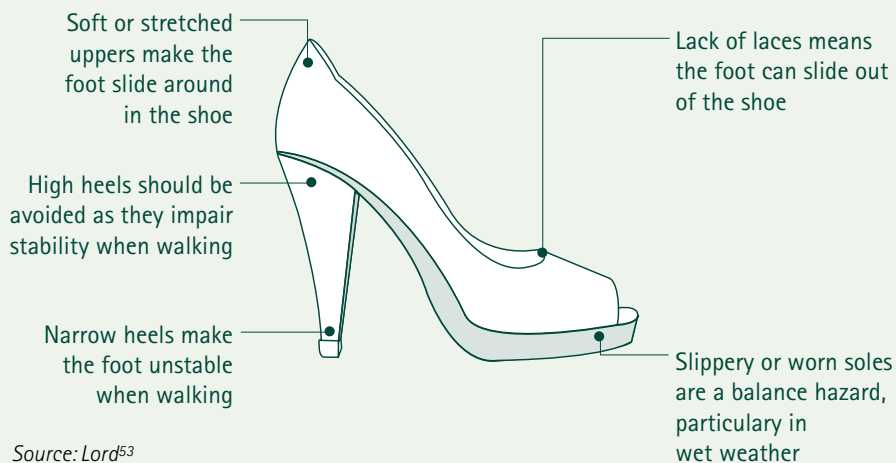
Mrs V, who lives in a nursing home, has difficulty with her balance and wears loose-fitting slippers. The nurse discussed the benefits of wearing well-fitting footwear and, with Mrs V's consent, ordered a new pair of fitted footwear from their local provider. As part of a multifactorial approach to reduce Mrs V's risk of having another fall, she was also referred to the supervised exercise classes. After one month, Mrs V reports a considerable improvement in her balance and an increase in her walking.

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## What makes a shoe safe?



## What makes a shoe unsafe?



Source: Lord<sup>53</sup>

Figure 4.1 The theoretical optimal 'safe' shoe, and 'unsafe' shoe

## 4.5 Syncope



### Recommendations

#### Assessment

- Residents who report unexplained falls or episodes of collapse should be assessed for the underlying cause.

#### Intervention

- Assessment and management of presyncope, syncope and postural hypotension, and review of medications (including medications associated with presyncope and syncope) should form part of a multifactorial assessment and management plan for preventing falls in residents. (Level I-\*)<sup>64</sup>
- Older people with unexplained falls or episodes of collapse who are diagnosed with the cardioinhibitory form of carotid sinus hypersensitivity should be treated with the insertion of a dual-chamber cardiac pacemaker. (Level II-\*)<sup>65</sup>

Note: there is no evidence derived specifically from the residential aged care setting relating to syncope and falls prevention. Recommendations have been inferred from community and hospital populations.

### 4.5.1 Assessing syncope

Syncope is a transient and self-limiting loss of consciousness. It is commonly described as *blacking out* or *fainting*. Presyncope describes the sensation of feeling faint or dizzy and can precede an episode of loss of consciousness. While a number of conditions can present with syncope, all share the final common pathway of cerebral hypoperfusion leading to an alteration in consciousness. Older people are more predisposed to syncopal events due to age-related physiological changes that affect their ability to adapt to changes in cerebral perfusion.

Residents reporting presyncope or syncope should have appropriate assessment and intervention. Their symptoms should be reported to their general practitioner, and a number of tests and further investigations may be warranted, depending on the history and results of the clinical examination. Further tests may include an electrocardiogram (ECG), echocardiography, Holter monitoring, tilt-table testing, and carotid sinus massage or insertion of an implantable loop recorder.

Permanent cardiac pacing is successful in treating certain types of syncope. Pacemakers prevent falls by 70% in people with accurately diagnosed cardioinhibitory carotid sinus hypersensitivity.<sup>65</sup>

The symptoms of orthostatic hypotension can be reduced using the following strategies:

- Ensure good hydration is maintained, particularly in hot weather.<sup>15,66,67</sup>
- Encourage the resident to sit up slowly from lying, stand up slowly from sitting and wait a short time before walking.<sup>66,67</sup>
- Minimise exposure to high temperatures or other conditions that cause peripheral vasodilation, including hot baths.<sup>67</sup>
- Minimise periods of prolonged bedrest and immobilisation.
- Encourage residents to rest with the head of the bed raised.
- Increase salt intake in the diet if not contraindicated.
- Where possible, avoid prescribing medications that may cause hypotension.
- Identify any need for using appropriate peripheral compression devices, such as antiembolic stockings.<sup>67</sup>
- Monitor and record postural blood pressure.<sup>15</sup>



### Case study

Mrs B is an 89-year-old woman living in a residential aged care facility (RACF). She has hypertension and has had a stroke, which left her with speech impairment and the need for help with activities of daily living. Carers reported to nursing staff that, when they helped Mrs B out of bed to go to the bathroom, her legs had given way. The carers felt that if they had not supported her, she would have fallen to the floor. Staff measured Mrs B's lying and standing blood pressures and found that her blood pressure on standing dropped more than 20 mm Hg (systolic). They reported this to her general practitioner who reviewed Mrs B's medications, including her antihypertensive agent. The dose of her antihypertensive was reduced. In addition, staff were encouraged to ensure that Mrs B's fluid intake was sufficient and that she was provided with the necessary assistance to drink on a regular basis throughout the day.

The RACF nurse manager requested staff to initiate a medical review if a person was identified as having light-headedness or dizziness related to postural hypotension. Staff are now careful to assess for hypotension if people are dizzy. The staff have implemented several new strategies to assist residents to maintain their hydration, such as ensuring all residents have a full glass of fluid with medications, and regular drinks breaks.

## 4.6 Dizziness and vertigo



### Recommendations

#### Assessment

- Vestibular dysfunction as a cause of dizziness, vertigo and imbalance needs to be identified in residents in the residential care setting. A history of vertigo or a sensation of spinning is highly characteristic of vestibular pathology.
- Use the Dix–Hallpike test to diagnose benign paroxysmal positional vertigo. This is the most common cause of vertigo in older people, and can be identified in the residential aged care setting. This is the only cause of vertigo that can be treated easily.

Note: there is no evidence from randomised controlled trials that treating vestibular disorders will reduce the rate of falls.



### Good practice points

- Use vestibular rehabilitation to treat dizziness and balance problems where indicated and available.
- Use the Epley manoeuvre to manage benign paroxysmal positional vertigo.
- Manoeuvres should only be done by an experienced person.

### 4.6.1 Assessing vestibular function

Dizziness in older people often represents a difficult diagnostic problem, because it is a subjective sensation that may result from impairment or disease in multiple systems.<sup>68</sup> When residents describe being 'dizzy', 'giddy' or 'faint', this may mean anything from an anxiety or fear of falling, to postural dysequilibrium, vertigo or presyncope; therefore, a detailed history is crucial.

An important step in minimising the risk of falls associated with dizziness is to assess vestibular function. This can be done in the RACF setting using the following steps and tests (these tests should only be done by an experienced person):

- Ask the resident about their symptoms. *Dizziness* is a general term that is used to describe a range of symptoms that imply a sense of disorientation.<sup>69</sup> Dizziness may be used to describe poor balance. *Vertigo*, a subtype of dizziness, is highly characteristic of vestibular dysfunction and is generally described as a sensation of spinning.<sup>70</sup>

- Assess peripheral vestibular function using the Halmagyi head-thrust test.<sup>71</sup> It only has good sensitivity if the vestibular dysfunction is severe or complete.<sup>72</sup>
- Use audiology testing to quantify the degree of hearing loss. The auditory and vestibular systems are closely connected; therefore, auditory symptoms (hearing loss, tinnitus) commonly occur in conjunction with symptoms of dizziness and vertigo.<sup>73</sup>
- If clinically indicated, request computed tomography or magnetic resonance imaging to identify an acoustic neuroma or central pathology.<sup>74</sup>
- Use the Dix–Hallpike manoeuvre to diagnose benign paroxysmal positional vertigo (BPPV). This test is included in a diagnostic protocol in general practice for evaluating dizziness in older people<sup>73</sup> and is considered mandatory in all people with dizziness and vertigo after head trauma.<sup>75</sup> BPPV should be strongly considered as part of the differential diagnosis in older people who report symptoms of dizziness or vertigo after a fall that involved some degree of head trauma.
- Use vestibular function tests to evaluate the integrity of the peripheral (inner ear) and central vestibular structures. These tests are available at some specialised audiology clinics and may be recommended if symptoms persist.<sup>76</sup>
- Refer the resident to a specialist, such as an ear, nose and throat specialist or a neurologist, if required.<sup>74</sup>

#### 4.6.2 *Choosing interventions to reduce symptoms of dizziness*

The following strategies can be used in the RACF setting to treat dizziness and balance problems caused by vestibular dysfunction. They can be used as part of a multifactorial falls prevention program to reduce the risk of falls related to dizziness.

##### **Medical management**

Based on clinical experience, treatment with antiemetics and vestibular suppression medication may be required to treat the unpleasant, associated symptoms of nausea and vomiting. These medications should only be used for a short time (one to two weeks) because they adversely affect the process of central compensation after acute vestibular disease.<sup>76</sup>

## Treating benign paroxysmal positional vertigo

The literature describes a range of options for treating BPPV, including:

- Brandt and Daroff exercises – these can be done regularly at home<sup>77</sup>
- the Epley manoeuvre – involves taking the resident slowly through a range of positions that aim to move the freely mobile otoconia back into the vestibule.<sup>78</sup> A meta-analysis showed that this manoeuvre is highly successful for treating BPPV.<sup>79</sup>

Older people with diagnosed BPPV respond as well to treatment as the general population; therefore, no special approaches are needed in this group.<sup>79</sup> However, it is important to diagnose and treat BPPV as soon as possible, because treatment improves dizziness and general wellbeing.<sup>80</sup> This is particularly true in the RACF setting.

## Vestibular rehabilitation

Vestibular rehabilitation (VR) is a multidisciplinary approach to treating stable vestibular dysfunction. The physiotherapy intervention component focuses on minimising a person's complaints of dizziness and balance problems through a series of exercises, which are modified to suit each person.<sup>81</sup> The occupational therapy intervention component involves incorporating the movements required to do these exercises into daily activities,<sup>82</sup> and the psychology input addresses the emotional impact of vestibular dysfunction.<sup>83</sup>

The literature emphasises the following characteristics of VR:

- VR is highly successful in treating stable vestibular problems in people of all ages.<sup>84</sup>
- Starting VR early is recommended in the community and hospital settings. Delayed initiation of VR is a significant factor in predicting unsuccessful outcomes over time.<sup>85</sup>
- Age does not significantly affect outcomes following a program of VR in older people who live in the community,<sup>86</sup> although cognitive impairment may influence the ability to comply with the exercise program.
- A supervised program of VR can be provided in RACFs to address safety and cognitive issues specific to this setting. Successful outcomes have been demonstrated with supervised VR provided once a week,<sup>87</sup> as well as three to five times per week.<sup>88</sup>



- VR can improve measures of balance performance in people older than 65 years who live in the community.<sup>89,90</sup> However, a study of people with multisensory dizziness showed that the prevalence of falls over a 12-month period did not differ between those receiving VR and a control group.<sup>91</sup>

Regular training courses in VR are held across Australia, and increasing numbers of physiotherapists working in acute and subacute hospital systems are now trained to assess and manage dizziness. These physiotherapists can be found by contacting the Australian Physiotherapy Association<sup>†</sup> or the Australian Vestibular Association.<sup>‡</sup>



### Case study

Mrs P is an 87-year-old woman who lives in a residential aged care facility. She requires help with personal care activities, such as showering and dressing, and has had several recent falls. Mrs P dislikes lying flat in bed and now sleeps with the head of her bed elevated. She avoids rolling over and requires light assistance to get out of bed in the morning. Her visiting general practitioner requested that Mrs P be tested for benign paroxysmal positional vertigo (BPPV). Dix–Hallpike testing identified this condition in her right inner ear. Following treatment using an Epley manoeuvre, Mrs P reported that she feels more stable on her feet and uses only two pillows at night. She has had no further falls since having her BPPV treated.

† <http://members.physiotherapy.asn.au>

‡ <http://www.dizzyday.com/avesta.html>

## 4.7 Medications



### Recommendations

#### *Assessment*

- Residents of residential aged care facilities should have their medications (prescribed and nonprescribed) reviewed at least yearly by a pharmacist after a fall, or after initiation or escalation in dosage of medication, or if there is multiple drug use.

#### *Intervention*

- As part of a multifactorial intervention,<sup>45</sup> or as a single intervention,<sup>7</sup> residents taking psychoactive medication should have their medication reviewed by a pharmacist and, where possible, discontinued gradually to minimise side effects and to reduce their risk of falling. (Level II)
- Limit multiple drug use to reduce side effects and interactions. (Level II-\*)<sup>45</sup>

### 4.7.1 Reviewing medications

Medication use is associated with falls in older people.<sup>92-95</sup> Therefore, a medication review should be a core part of the assessment of residents<sup>7,96</sup> and should be done regularly for those who have repeat prescriptions.

Medication review in RACFs should include:

- reviewing the resident's medications on admission<sup>96-99</sup>
- reviewing medications annually, after a fall, or after initiation or escalation in dosage of medications<sup>97</sup>
- using a pharmacist to reduce the number of medications taken by residents with dementia,<sup>7</sup> delirium or a change in health status.

Residential medication management reviews (RMMRs) are available to all permanent residents of a facility in which residential care services are provided, as defined in the *Aged Care Act 1997*. An RMMR involves collaboration between the resident's general practitioner and a pharmacist. An RMMR reviews the resident's medications, which are then discussed by the pharmacist and the referring general practitioner. The key outcome of the process is a new or revised medication management plan that is agreed between the general practitioner and the resident or their carer. For more details, see the Australian Government Department of Health and Ageing website.<sup>†</sup>

† <http://www.health.gov.au/internet/main/publishing.nsf/Content/health-epc-dmmrqa.htm>

Health care professionals and care staff can use the following checklist to help decide whether a resident requires a medication review from a pharmacist or doctor. A review is needed if the resident:<sup>97</sup>

- is taking more than 12 doses of medication a day
- is taking one or more psychoactive medications
- is taking four or more different types of medications
- has multiple medical conditions
- is suspected of not adhering to their medication regime
- has symptoms that suggest an adverse medication reaction (eg confusion, dizziness, reduced balance).

New residents are entitled to an RMMR on admission. Current residents can have an RMMR at the request of their medical practitioner. For instance, an RMMR may be needed because of a significant change in the resident's medical condition or medication regimen.

The need for a new RMMR is indicated by:

- discharge from an acute care facility in the previous four weeks
- significant changes to the medication regimen in the past three months
- change in medical conditions or abilities (including falls, cognition, physical function)
- prescription of medication with a narrow therapeutic index or requiring therapeutic monitoring
- presentation of symptoms suggestive of an adverse drug reaction
- subtherapeutic response to treatment
- suspected nonadherence or problems with managing drug-related therapeutic devices
- risk of inability to continue managing own medications (eg due to changes with dexterity, confusion or impaired sight).

#### 4.7.2 *Providing interventions*

The following interventions can be used as part of a multifactorial falls risk prevention program:

- Withdraw psychoactive medication gradually and under appropriate supervision to reduce the risk of falls significantly.<sup>100</sup> The National Prescribing Service has guidelines on withdrawing benzodiazepines.<sup>†</sup>

† [http://www.nps.org.au/\\_\\_\\_data/assets/pdf\\_file/0004/16915/ppr04.pdf](http://www.nps.org.au/___data/assets/pdf_file/0004/16915/ppr04.pdf)

- Drugs that act on the central nervous system, especially psychoactive drugs, are associated with an increased risk of falls; therefore, they should be used with caution and only after weighing up their risks and benefits.<sup>6</sup>
- Alternatives to drugs that act on the central nervous system (eg psychosocial treatments) to manage sleep disorders, anxiety and depression should be tried before pharmacological treatment. One study in an RACF found that group education and relaxation training can successfully reduce benzodiazepine use for sleep disturbance.<sup>101</sup>
- If centrally acting medications such as benzodiazepines are prescribed, increase surveillance and support mechanisms for residents during the first few weeks of taking these drugs, because the risk of falling is greatest during this period.<sup>102</sup>
- Limit multiple drug use to reduce side effects and interactions, and a tendency towards proliferation of medication use.<sup>45</sup>

In addition, the following strategies help to ensure quality use of medicines, and are good practice for minimising falls:

- Review medications as part of a comprehensive assessment of a resident's risk of falling.
- Prescribe the lowest effective dosage of a medication specific to the symptoms.
- Provide support and reassurance to residents who are gradually stopping the use of psychoactive medication(s).
- If the resident needs to take medications known to be implicated in increasing the risk of falls, try to minimise the adverse effects (ie drowsiness, dizziness, confusion and gait disturbance).
- Provide the resident and their carer with explanations of newly prescribed medications or changes to prescriptions.
- Educate the whole multidisciplinary team, residents and their carers to improve their awareness of the medications associated with an increased risk of falls.
- Document information when implementing, evaluating, intervening, reviewing, educating and making recommendations about medication use.



### Case study

Mr F is an 80-year-old man whose behaviour had become unmanageable, with outbursts of violence towards staff and fellow residents of his residential aged care facility (RACF). His gait and posture had changed and he had become notably drowsy. The nurse in charge at his RACF suspected that constipation could be the main cause of his behavioural change. As part of an evaluation, the nurse initiated a residential medication management review. After pharmaceutical review, it was found that recent medication changes had increased Mr F's prescription of haloperidol (an antipsychotic drug) in response to his behavioural change. A revised medication management plan was agreed, which addressed Mr F's constipation and gradually reduced and then discontinued the haloperidol. He was prescribed vitamin D and calcium to reduce fracture risk. RACF staff engaged Mr F in a walking and group balance program to further reduce his risk of falls.



## 4.8 Vision



### Recommendations

#### Assessment

- Arrange regular eye examinations (every two years) for residents in residential aged care facilities to reduce the incidence of visual impairment, which is associated with an increased risk of falls.

#### Intervention

- Residents with visual impairment related to cataract should have cataract surgery as soon as practicable. (Level II-\*)<sup>103,104</sup>
- Environmental assessment and modification should be undertaken for residents with severe visual impairments (visual acuity worse than 6/24). (Level II-\*)<sup>105</sup>
- When correcting other visual impairment (eg prescription of new glasses), explain to the resident and their carers that extra care is needed while the resident gets used to the new visual information. Falls may increase as a result of visual acuity correction. (Level II-\*)<sup>106</sup>
- Advise residents with a history of falls or an increased risk of falls to avoid bifocals or multifocals and to use single-lens distance glasses when walking – especially when negotiating steps or walking in unfamiliar surroundings. (Level III-2-\*)<sup>107</sup>

Note: there have not been enough studies to form strong, evidence based recommendations about correcting visual impairment to prevent falls in any setting (community, hospital, residential aged care facility), particularly when used as single interventions. One trial, set in the community, showed an increase in falls as a result of visual acuity assessment and correction.<sup>106</sup> However, correcting visual impairment may improve the health of the older person in other ways (eg by increasing independence). Considerable research has linked falls with visual impairment in the community setting, although no trials have reduced falls by correcting visual impairment, and these results may also apply to the residential aged care setting.

### 4.8.1 Screening vision

Reduced visual acuity is an important risk factor for falls in high-care RACFs;<sup>108</sup> therefore, it is important to measure vision problems in residents of RACFs. Vision problems may be measured using the following strategies:

- Ask the resident about their vision and record any visual complaints and history of eye problems and eye disease.
- Check for signs of visual deterioration. This can include assessing the resident's ability to see detail in objects, read (including avoiding reading) or watch television; a tendency to spill drinks; or a tendency to bump into objects.

- Measure visual acuity or contrast sensitivity using a standard eye chart (eg Snellen eye chart) or the Melbourne Edge Test (MET), respectively (see Table 4.3).
- Check for signs of visual field loss using a confrontation test (see Table 4.3) and refer the resident for a full automated perimetry test by an optometrist or ophthalmologist if any defects are found. Large, prospective studies found that prospective falls were mostly as a result of loss of field sensitivity, rather than loss of visual acuity and contrast sensitivity.<sup>109,110</sup>

**Table 4.3 Characteristics of eye-screening tests**

Snellen eye chart (for testing visual acuity)	
Description	<p>Standardised eye test of visual acuity.</p> <p>Comprises a series of symbols (usually letters) in lines of gradually decreasing sizes.</p> <p>Participant is asked to read the chart from a distance of 6 metres for standard charts (charts designed for shorter test distances are available; the examiner should check that they are using the correct working distance for the chart).</p> <p>Charts should be well lit and not obscured by glare or shadows.</p> <p>Visual acuity is stated as a fraction, with 6 being the numerator and the last line read the denominator (the larger the denominator, the worse the visual acuity).</p> <p>Pocket versions of Snellen charts are available for a clinical screen of visual acuity (these smaller charts can be used at a shorter distance than the standard 6 metres to test visual acuity).</p>
Time needed	5 minutes
Criterion	A score of 6/12 indicates visual impairment; however, this depends on the age of the person (the cut-off score will decrease with increasing age).

Melbourne Edge Test (MET) (for testing contrast sensitivity)<sup>111</sup>

Description	<p>The test presents 20 circular patches containing edges with reducing contrast.</p> <p>Correct identification of the orientation of the edges on the patches provides a measure of contrast sensitivity in decibel units, where <math>\text{dB} = -10\log_{10} \text{contrast}</math>, where contrast defines the ratio of luminance levels of the two halves of the circular patch.</p>
Time needed	5 minutes
Criterion	A score of less than 18/24 indicates visual impairment; however, the results are age dependent. <sup>111</sup>

Confrontation Visual Field Test<sup>112</sup>

Description	<p>Crude test of visual fields.</p> <p>Participant and examiner sit between 66 cm and 1 m apart at the same height, with the examiner's back towards a blank wall. To test the right eye, the participant covers the left eye with the palm of the hand and stares at the examiner's nose.</p> <p>The examiner holds up both hands in the upper half of the field, one either side of the vertical, and each with either 1 or 2 fingers extended, and asks the participant, 'What is the total number of fingers I am holding up?'</p> <p>The procedure is repeated for the lower half of the field but changing the number of fingers extended in each hand. The procedure is repeated for the left eye. If the participant incorrectly counts the number of fingers in the upper or lower field, it should be repeated again and recorded. If the participant moves fixation to view the peripheral targets, repeat the presentation.</p> <p>Results are recorded as finger counting fields R<math>\checkmark</math> and L<math>\checkmark</math> if the participant correctly reports the number of fingers presented. For those who fail this screening, a diagram should be drawn to indicate in which part of the field the participant made an error.</p>
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## Confrontation Visual Field Test<sup>112</sup>

Time needed	4 minutes
Criterion	If the participant incorrectly reports the number of fingers held up for either eye, they should be referred for a full visual field test.

If a more detailed visual assessment is needed once the resident has been assessed using the crude visual screening methods described above, or if the resident scores poorly on these tests, RACF staff should refer them to an optometrist, orthoptist or ophthalmologist for a full vision assessment.

### 4.8.2 Providing interventions

No studies have looked at vision intervention in RACFs. However, research in the community setting about reducing falls risk through vision intervention may also be applicable to RACFs. Interventions that could be used include the following:

- *Expedited cataract surgery*: this is the only evidence based intervention to date that is effective for reducing both falls and fractures in older people.<sup>103,104</sup>
- *Occupational therapy interventions*: in people with severe visual impairments, home safety should be assessed by an occupational therapist to identify potential hazards, lack of equipment and risky behaviour that might lead to falls. Interventions that help to maximise visual cues and reduce visual hazards should also be used; these include providing adequate lighting and contrast (eg painting white strips along the edges of stairs and pathways).<sup>105,113</sup> Three studies in RACFs included environmental modification as part of a successful multifactorial intervention program.<sup>6,8,45</sup>
- *Detecting new visual problems*: when a new visual problem is detected, staff of the RACF should refer the resident to an eye specialist<sup>52</sup>
  - if the resident has impaired visual acuity, wears spectacles that are scratched or do not fit comfortably, or has not had an eye examination in the past year
  - if there is no known reason for poor vision.

- *Prescription of optimal spectacle correction with caution:* make sure the resident's prescription is correct and refer them to an optometrist if necessary. However, caution is required in frail, older people; a randomised controlled trial found that comprehensive vision assessment with appropriate treatment does not reduce – and may even increase – the risk of falls.<sup>106</sup> The authors speculated that large changes in visual correction may have increased the risk of falls, and that more time may be needed to adapt to updated prescriptions or new glasses.
- *Advice on the most appropriate type of spectacle correction:* wearing bifocal or multifocal spectacle lenses when walking outside the home and on stairs has been associated with a twofold increase in the risk of falls in older people who live in the community.<sup>107</sup> These results may also apply to residents in an RACF setting. The health care team should advise residents with a fall history or identified increased falls risk to use single-vision spectacles (instead of bifocals or multifocals) when walking, especially when negotiating steps or moving about in unfamiliar surroundings. A study also suggested telling older people who wear multifocals and distance, single-vision spectacles to flex their heads rather than just lowering their eyes to look downwards to avoid postural instability.<sup>114</sup>



### Point of interest: mobility training

Vision Australia<sup>†</sup> specialises in safe mobility training for visually impaired people.

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### Case study

Mr B is an 84-year-old gentleman who lives in a residential aged care facility (RACF). Recently, he tripped and fell on a step. He said that he did not notice the step, and also reported that his vision seemed to be growing fuzziier. Staff at the RACF referred Mr B to an optometrist to check he was wearing the optimum spectacle correction for distance vision. The optometrist diagnosed that the cause of Mr B's vision loss was macular degeneration. Staff at the RACF took measures to provide a safe environment for Mr B to walk around. Staff also checked that his room was properly lit at all times. Mr B now has a light by his bed and his walking frame is always positioned by the bedside at night, because he tends to get up at night to go to the toilet. Mr B was also given instructions about mobilisation and encouraged to call for help when he did not feel confident to walk around, away from his room. Staff have made sure that Mr B has supervision when negotiating steps.

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<sup>†</sup> <http://www.visionaustralia.org.au>

## 4.9 Environmental considerations



### Recommendations

#### *Assessment*

- Residents considered to be at a higher risk of falling should be assessed by an occupational therapist and physiotherapist for specific environmental or equipment needs and training to maximise safety.

#### *Intervention*

- Environmental review and modification should be considered as part of a multifactorial approach in a falls prevention program. (Level I)<sup>5</sup>



### Good practice points

- Residential aged care facility staff should discuss with residents their preferred arrangement for personal belongings and furniture. They should also determine the resident's preferred sleeping arrangements.
- Make sure residents' personal belongings and equipment are easy and safe for them to access.
- Check all aspects of the environment and modify as necessary to reduce the risk of falls (eg furniture, lighting, floor surfaces, clutter and spills, and mobilisation aids).
- Conduct environmental reviews regularly, and consider combining them with occupational health and safety audits.

### 4.9.1 *Assessing the resident in their environment*

An environmental assessment should be done by a health professional (eg an occupational therapist) with experience and training in evaluating people and their environment.<sup>64</sup> An occupational therapist can evaluate residents to determine their capacity to plan and perform activities of daily living (ADL) and to meet the functional demands of the environment.<sup>115</sup>

Where an occupational therapist receives a referral from another member of the health care team and is asked to review a resident because of a fall or risk of falls, the occupational therapist should do the following:

- Conduct an initial evaluation and identify the range of environments in which the person lives, chart their daily schedule or routine and identify relevant ADL for assessment.

- Assess the person's impairment by checking their
  - physical resources (strength, range of motion, coordination, sensation, balance)
  - perceptual or cognitive function
  - general mobility (bed, wheelchair ambulation).
- Conduct a performance evaluation using an ADL checklist or standardised ADL evaluation. While many of these exist, assessments that focus on functional performance and safety in ADL concurrently are recommended. ADL assessments should include<sup>115,116</sup>
  - mobility: movement in bed, wheelchair mobility and transfers, indoor and outdoor ambulation with equipment and use of transportation (where appropriate)
  - self-care activities: dressing, feeding, toileting, bathing and grooming
  - management of environmental devices: use of light switches and call bells; ability to open windows, reach into cupboards and access personal items
  - communication: ability to summon help and communicate needs.

The assessment should include observing the person within their environment, including their use of equipment. Also, the assessment should be done at the same time of day and in the same location that the person normally does these tasks,<sup>116</sup> and with the same walking aids and devices that they would usually use.

When evaluating the person's performance in ADL, the occupational therapist should observe:

- methods the person is using or attempting to use to accomplish the task
- safety factors (use of equipment safety features, etc)
- ease of mobility
- limitations imposed by the environment (eg disparity in transfer surfaces, inappropriate position of grab rails)
- suitability of existing assistive devices.

At the end of the evaluation, the occupational therapist should provide a summary identifying:

- additional safety equipment required
- assistive devices required and recommendations for their use
- rearrangement of furniture
- environmental modifications required
- training requirements of the resident in safe transfer technique and equipment use.

Equipment or alterations should be noted in terms of size, specification and cost. Recommendations should be reviewed with the person and the relevant staff of the facility.

#### 4.9.2 *Designing multifactorial interventions that include environmental modifications*

A multifactorial approach that addresses the environmental and cultural setting of the institution can reduce falls for nursing home residents.<sup>8,117,118</sup> Effective multifactorial interventions should incorporate environmental modifications such as:<sup>119</sup>

- ensuring chairs and beds are at the correct height (ie when the resident's feet are flat on the ground, their hips are slightly higher than their knees)
- assessing lighting
- installing nonslip flooring in wet areas
- routinely cleaning up wet floors
- installing additional rails in bathrooms and corridors
- reducing clutter in residents' rooms
- providing and repairing walking aids
- replacing or repairing unsafe footwear
- removing loose carpets
- providing individual seating
- promoting wheelchair safety
- providing bed stabilisers, and bedside commodes at night
- moving residents at high risk of falling closer to the nursing station
- using electronic warning devices and avoiding use of restraints.

Little research has looked at floor surfaces, but one small observational study has shown that wooden floors covered by carpet were associated with the lowest number of fractures when comparing carpeted, uncarpeted, wooden and concrete floors.<sup>120</sup> Therefore, carpeting high-traffic areas might be a useful component of a multifactorial intervention strategy,<sup>119</sup> although it should be remembered that carpeting will not reduce the risk or incidence of falls, but may help to minimise injuries.

### 4.9.3 *Conducting environmental audits*

Regular environmental reviews should be done with the following points in mind:

Make modifications based on the findings of the audit. Prioritise audits by considering the following environments:

- high-risk environments (bedrooms, dining rooms, bathrooms and toilets)
- environments identified through incident monitoring, hazard identification or near-miss reporting
- environments identified through environmental checklists.

Include external environments in environmental reviewing.<sup>121</sup> Consider how environmental reviews may fit in with existing workplace health and safety audits. Involve a range of disciplines in environmental reviews and interventions, including health professionals, workplace health and safety personnel, infection-control personnel,<sup>121</sup> staff working in that particular environment, specialists in geriatric assessment or ergonomics, technical advisers and residents' carers, where appropriate. Ensure a mechanism is in place for reporting environmental hazards.

When considering environmental change, RACF staff should explore a range of products, equipment and innovative solutions. Keep in mind that changing a resident's environment could have a negative impact. For example, reorganising furniture may be contraindicated for residents who are visually impaired or those with dementia.

### 4.9.4 *Orientating new residents*

Many falls occur in a person's first few days in a new setting.<sup>122</sup> Therefore, staff in RACFs should help residents to become familiar with new environments and teach them to use equipment.<sup>123</sup> This orientation could include teaching the resident to mobilise and transfer safely between furniture or equipment that they are unfamiliar with.<sup>98,124</sup>

### 4.9.5 *Incorporating capital works planning and design*

When building or renovating RACFs, the following issues should be considered:

Safety and practicality are just as important as aesthetics. Facilities should conform to legislated safety requirements.<sup>121,125</sup> A design that allows observation or surveillance of residents is important for safety.<sup>121</sup> Lighting and handrails at steps and stairs should be used, and stairs should be designed to allow safe descent.<sup>125</sup> Slip-resistant flooring should be installed in all wet areas.<sup>125</sup>

### 4.9.6 *Providing storage and equipment*

The risk of falls needs to be considered when new equipment is acquired, or when existing equipment arrangements are being designed or modified (eg walking aids, new seating, shower chairs).<sup>121,125</sup> Health professionals and RACF staff should be involved in decisions about buying equipment.

Clutter should be reduced by providing adequate storage space for equipment,<sup>121</sup> and equipment should be audited at least monthly.<sup>53</sup>



#### Case study

Mr G has Parkinson's disease. Recently, staff noticed that he finds it hard to rise from the lounge chair in his room at the residential aged care facility. Nursing staff advised his general practitioner, who undertook a medical review, and therapy staff assessed his transfers and activities of daily living. His chair height was adjusted and a wedge cushion supplied (for use in both lounge and dining rooms), assistive bed equipment was provided for bed transfers, and support staff were instructed in how to best help him with transfers given his condition. Mr G now attends regular group sessions with the physiotherapist aimed at balance and strength training. As a result of this process, Mr G is now safer in his activities of daily living and has a lower risk of falling.

## 4.10 Individual surveillance and observation

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### Recommendations

#### *Intervention*

- Include individual observation and surveillance as components of a multifactorial falls prevention program, but take care not to infringe on residents' privacy. (Level III-2-\*)<sup>10</sup>
- Falls risk alert cards and symbols can be used to flag high-risk residents as part of a multifactorial falls prevention program, as long as appropriate interventions are used as follow-up. (Level II-\*)<sup>126</sup>
- Falls alerts used on their own are ineffective. (Level II)<sup>127</sup>
- Consider using a volunteer sitter program for people who have a high risk of falling, and define the volunteer roles clearly. (Level IV-\*)<sup>128,129</sup>
- Residents with dementia should be observed more frequently for their risk of falling, because severe cognitive impairment is predictive of lying on the floor for a long time after a fall. (Level III-2-\*)<sup>10</sup>

Note: most falls in residential aged care facilities are unwitnessed.<sup>130</sup> Therefore, as is done in the hospital setting, the key to reducing falls is to improve surveillance, particularly for residents with a high risk of falling.<sup>10</sup>

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### Good practice points

- Individual observation and surveillance are likely to prevent falls. Many falls happen in the immediate bed or bedside area, or are associated with restlessness, agitation, attempts to transfer and stand, lack of awareness or wandering in people with dementia.
  - Residents who have a high risk of falling should be identified and checked regularly.
  - A staff member should stay with at-risk residents while they are in the bathroom.
  - Although many residents are frail, not all are at a high risk of falling; therefore, surveillance interventions can be targeted to those residents who have the highest risk.
  - A range of alarm systems and alert devices are commercially available, including motion sensors, video surveillance and pressure sensors. They should be tested for suitability before purchase, and appropriate training and response mechanisms should be offered to staff. Suppliers of these devices should be located if a facility is considering this intervention. However, there is no evidence that their use in residential aged care facilities reduces falls or improves safety.
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### 4.10.1 *Choosing an approach to surveillance and observation*

While many residents of RACFs are frail, not all have a high risk of falling because of their relatively immobile state. Therefore, the burden of care can be eased by targeting surveillance interventions to those who have the highest risk of falling.

The following general principles of observation and surveillance in RACFs are based on good practice in the hospital setting, and may also be considered good practice in the RACF setting:

- Choose a surveillance and observation approach for each resident, based on a falls risk assessment, clinical reasoning, and access to resources and technology.
- More than one surveillance approach should be used, to minimise dependence on one specific approach.
- Continuously improve surveillance by reviewing staff practices, such as timing of tea and lunch breaks, to ensure that adequate supervision is available when required.
- Consider residents' personal preferences for personal hygiene and frequency of showering on an individual basis, and balance this against the existing routines in the RACF.
- Where possible, allocate high-visibility beds or rooms (eg near nursing stations) to those residents who require more attention and supervision, including residents who have a high risk of falling.

Remember that the circumstances of an older person being admitted to an acute or rehabilitation hospital mean their risk profile differs markedly from that of the resident in a stable state in an RACF. Strategies are not necessarily transferable.

## 4.10.2 Using flagging

Residents who have a high risk of falling should be informed of their risk. In an RACF, the resident's risk of falling should be identified ('flagged') in such a way that considers their privacy, yet is recognised easily by staff and the resident's family and carers. A range of methods other than verbal and written communication may be used to ensure ongoing communication of high-risk status (flagging), including:

- coloured stickers or markers (positioned on case notes, walking aids, bedheads)<sup>127</sup>
- signs, pictures or graphics on or near the bedhead.<sup>126,127</sup>

Flagging reminds staff that a resident has a high risk of falling, and should trigger interventions that may prevent a fall. These interventions must be available or the flagging may not be beneficial. Flagging may also improve a resident's own awareness of their potential to fall.<sup>99</sup>

## 4.10.3 Using colours for stickers and bedside notices

Green or orange are frequently used colours for stickers and bedside notices to signify a high risk of falling. Although some falls prevention studies have used 'high-risk' alert stickers, the results are conflicting. In the absence of data to the contrary, it may be beneficial for staff to flag high-risk residents, using colours or symbols consistently. Ongoing staff education about the purpose and importance of flagging is essential.

Ideally, in the hospital setting, patients who have a high risk of falling should be checked at least half-hourly and offered assistance; this may also apply to the RACF setting.<sup>131</sup> A staff member should remain with the high-risk resident while in the bathroom.<sup>131</sup>

If appropriate, RACF staff should notify carers, family or friends of the resident's risk of falling and their need for close monitoring. Encourage them to spend time sitting with the person, particularly in waking hours, and to notify staff if the resident requires assistance.

If a nearby resident consents to informally observe the resident at risk of falling, they may report to staff if that resident needs help.

#### 4.10.4 Using sitter programs

Some RACFs have introduced sitter programs.<sup>132</sup> These programs use volunteers, families or paid staff to sit with residents who have a high risk of falling. The sitters are rostered to spend between two and eight hours at a time with a resident. The role of the sitter is to provide company for the resident and to notify the appropriate staff when the resident wishes to undertake an activity where they may be at risk of falling (such as transferring or mobilising). This may be a viable strategy in certain settings, in an effort to reduce falls for selected residents. Using sitters requires planning, resources, education, investment (particularly for paid people) and ongoing coordination.

#### 4.10.5 Using response systems

Response systems are usually a form of monitor, incorporating an alarm that sounds when a person moves. A number of response systems are commercially available.

One type of alarm is a credit card-sized patch containing a receiver, which is worn on the body.<sup>133</sup> Ideally, the patch is worn directly on the thigh. However, for people with compromised skin integrity, the patch can be placed on clothing (although this limits its usefulness to when clothing is worn). The alarm can be integrated with existing nurse-call systems and is activated when the wearer's leg moves to a weight-bearing position. The possible advantages of a body-worn device appear to be its small size and nonobtrusiveness, and that it can be integrated with existing nurse-call systems.

In other alarm systems, an alarm sounds when any part of a person's body moves within a space monitored by the alarm. Yet another style of alarm activates when a person falls but does not get up. Response systems require capital investment and rely on a third party (eg RACF staff or the resident's carer) to respond when the alarm sounds. The issues of who responds and how, and what impact this has on ward practice – including that it may take away from other areas of care – need to be considered before any system is implemented.

Alarms may pose risk management problems for RACFs in that failure to respond to an alarm because of lack of staffing could be seen as a failure in care. Moreover, it is not necessarily correct to assume that if someone lacks mental capacity due to dementia, they should be subjected to intrusive surveillance to prevent falls.<sup>134</sup> Care should be taken that alarms do not infringe on autonomy. The lack of clear research results (probably due to the difficulties in researching this area), and the ethical and legal considerations of monitoring people should be considered when making decisions. There is no evidence to support the use of alarms in preventing falls.



### Case study

Miss D is a mobile 90-year-old resident of a residential aged care facility. She has dementia and has been falling frequently in the past month. All staff – including medical, allied health, nursing, administration, food services and operational staff – are aware of Miss D's high fall risk because of a green sticker on her bedhead and her walking aid. This is an ongoing reminder that Miss D should walk with supervision at all times. To avoid confusing and disorientating Miss D, staff agree not to move her to a room of higher visibility, but each hour, night and day, they check on her. If Miss D is awake, she is offered assistance. Family, carers and friends know of Miss D's high risk of falling and are encouraged to spend time with her. Recognising the importance of maintaining her mobility, staff do not discourage her from being mobile. An alarm device is used when she is in bed. All staff are aware of the need to respond promptly when the alarm is activated.



## 4.11 Restraints



### Recommendation

#### Assessment

- Causes of agitation, wandering or other behaviours should be investigated, and reversible causes of these behaviours (eg delirium) should be treated before the use of restraint is considered.

Note: physical restraints should be considered the last option for residents who are at risk of falling<sup>135</sup> because there is no evidence that their use reduces incidents of falls or serious injuries in older people.<sup>136-139</sup> However, there is evidence that they can cause death, injury or infringement of autonomy.<sup>140,141</sup>



### Good practice points

- The focus of caring for residents with behavioural issues should be on responding to the resident's behaviour and understanding its cause, rather than attempting to control it.
- All alternatives to restraints should be considered, discussed with family and carers, and trialled for residents with cognitive impairment, including delirium.
- If all alternatives are exhausted, the rationale for using restraint must be documented and an anticipated duration agreed on by the health care team, in consultation with family and carers, and reviewed regularly.
- If drugs are used specifically to restrain a resident, the minimal dose should be used and the resident reviewed and monitored to ensure their safety. Importantly, chemical restraint must not be a substitute for alternative methods of restraint outlined in this chapter.

### 4.11.1 *Assessing the need for restraints and considering alternatives*

RACFs should aim to be restraint free. All RACFs should have clear policies and procedures on the use of restraints, in line with state or territory legislation and guidelines. Causes of agitation, wandering or other behaviours should be investigated, and reversible causes of these behaviours (eg delirium) should be treated before the use of restraints is considered.<sup>15,142</sup> Restraints should not be used at all for residents who can walk safely and who wander or disturb other residents.<sup>99</sup> Wandering behaviour warrants urgent exploration of other management strategies, including behavioural and environmental alternatives to restraint use.

These alternatives may include:<sup>143</sup>

- using strategies to increase observation or surveillance
- providing companionship
- providing physical and diversionary activity
- meeting the resident's physical and comfort needs, especially toileting (according to individual routines as much as possible rather than facility routines)
- using low beds
- decreasing environmental noise and activity
- exploring previous routines, likes and dislikes, and attempting to incorporate these into the care plan.

Staff of RACFs should have appropriate and adequate education about alternatives to restraints. Education can reduce the perceived need to use restraints, as well as minimise the risk of injury when they are used.<sup>135</sup>

#### 4.11.2 *Using restraints*

When the resident's health care team has considered all alternatives to restraints, and agreed that the alternatives are inappropriate or ineffective, restraints could be considered. In such cases, restraints should only be used temporarily to:<sup>135</sup>

- prevent or minimise harm to the resident
- prevent harm to others
- optimise the resident's health status.

The health care team must also take into account the rights and wishes of the resident, their carer(s) and family.<sup>15</sup> Any decision to use restraints should be made by discussing their use and possible alternatives with the resident, their carer(s) and family.

When the use of restraints is unavoidable, the type of restraint chosen should always be the least restrictive to achieve the desired outcome. Furthermore, restraint use should be monitored and evaluated continually. Restraints should not be a substitute for supervision, inadequate staffing or lack of equipment,<sup>143,144</sup> and they should not be applied without the support of a written order.<sup>143</sup> The minimum standard of documentation for restraint use should include:<sup>135,145</sup>

- date and time of application
- the name of the person ordering the restraint
- authorisation from the medical officer

- evidence of regular review
- type of restraint
- reasons for the restraint
- alternatives considered and trialled
- information about discussion with the resident, carers or substitute decision makers
- any restrictions on the circumstances in which the restraint may be applied
- the intervals at which the resident must be observed
- any special measures necessary to ensure the resident's proper treatment while the restraint is applied
- the duration of the restraint.



### Case study

Mrs S is a 90-year-old woman who lives in a residential aged care facility. She has dementia and walks with supervision. Her family requested that the staff raise the bed rails when she is in bed, because they were concerned she would get up without assistance and could fall. The staff discussed with Mrs S's family the potential for injury if she manages to climb over raised bed rails. They informed the family of their restraint reduction policy, which particularly targets the reduced use of bed rails or bedsides.

Staff repeated a falls risk assessment and developed a management plan aiming to reduce Mrs S's risk of falling. They addressed the identified risk factors for falling, including a medication review and reduction in psychotropic medication, and a supervised balance and strengthening exercise program with the physiotherapist. Staff also issued Mrs S with hip protectors, lowered the bed to its lowest height when Mrs S is in bed, placed one side of the bed against the wall and ensured everything she needed was within her reach. Despite their efforts, the family remained insistent that the bed rails be raised. Staff will continue to work with the family and trial alternative options, and have requested a case conference with the family and the general practitioner in a few weeks to review the current strategies.

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# 5 Minimising injuries from falls

## 5.1 Hip protectors



### Recommendations

#### *Assessment*

- When assessing a resident's need for hip protectors in a residential aged care facility (RACF), staff should consider the resident's recent falls history, age, mobility and steadiness of gait, disability status, and whether they have osteoporosis or a low body mass index.
- Assessing the resident's cognition and independence in daily living skills (eg dexterity in dressing) may also help determine whether they will be able to use hip protectors.

#### *Intervention*

- Use hip protectors to reduce the risk of fractures for frail, older people in institutional care. (Level I)<sup>146</sup>
- Hip protectors must be worn correctly for any protective effect, and the residential care facility should educate and train staff in the correct application and care of hip protectors. (Level II)<sup>147</sup>
- When using hip protectors as part of a falls prevention strategy, RACF staff should check regularly that the resident is wearing their protectors, that the hip protectors are in the correct position, and that they are comfortable and the resident can put them on easily. (Level I)<sup>146</sup>



### Good practice point

- Hip protectors are a personal garment and should not be shared among people.

### 5.1.1 *Assessing the need for hip protectors*

Hip protectors are one approach to reducing the risk of hip fracture. They come in various styles, and are designed to absorb or disperse forces on the hip if a person falls onto their hip area. Hip protectors consist of undergarments with protective material inserted over the hip regions. There are three types of hip protectors:

- soft hip protectors, which are made from a soft material
- hard hip protectors, which consist of a firm, curved shell, sewn or slipped into a pocket in a lycra undergarment, similar to underpants or bike pants
- adhesive hip protectors, which are stuck directly to the skin of the wearer.

Because of the diversity of older people, service settings and climates, residents of aged care facilities should be offered a choice of types and sizes of hip protectors. Soft, energy-absorbing protectors are often reported to be more comfortable for wearing in bed. A choice of underwear styles and materials means that problems with hot weather, discomfort and appearance can be addressed.

When assessing a resident's need for hip protectors, residential aged care facility (RACF) staff should consider the resident's recent history of falls, age, mobility, whether they have a disability, whether they are unsteady on their feet and whether they have osteoporosis. Assessing the resident's cognition and independence in daily living skills (eg dexterity in dressing) may also help determine whether the resident will be able to use hip protectors. RACF staff can use a falls risk assessment tool to help decide whether someone has a high risk of falling and therefore be considered for the use of hip protectors.

### 5.1.2 *Using hip protectors at night*

There is a risk of falling and breaking the hip during the evening and night. If the risk is sufficient to justify the use of hip protectors, and the resident gets out of bed to go to the toilet at night, the use of hip protectors at night should be considered. The soft protectors are relatively comfortable when positioned correctly and can be worn more easily in bed, because they are less obtrusive than the hard shell protectors.<sup>99</sup>

### 5.1.3 Assessing the cost of hip protectors

The cost of hip protectors appears to be a factor influencing uptake. Reimbursement by private health funds or by appliance supply schemes may improve this problem. It is unclear to what degree cost affects adherence with longer term use of hip protectors.

### 5.1.4 Training in hip protector use

Fitting and managing hip protectors are often the responsibilities of a particular member of the health team. Nurses and personal care attendants are in a key position to encourage adherence with hip protector use, because they help frail residents with dressing, bathing and toileting. Nurses and personal care attendants should be given education and support in developing strategies to encourage adherence with, and correct application of, hip protectors.

Before the resident starts wearing hip protectors, RACF staff should discuss arrangements for cleaning the protectors. Washing in domestic washing machines and dryers is feasible, but some hip protectors will not withstand commercial laundering. While self-adhesive hip protectors may be appealing in some instances (ie they can be worn with the older person's own undergarments), it is unclear whether they can be used safely in the long term.



#### Case study

Recently, Mrs J was admitted to a residential aged care facility (RACF). On admission, her falls risk assessment indicated she had a moderate risk of falling. RACF staff implemented several falls prevention strategies, including recommending safer footwear and referring Mrs J to the physiotherapist for an exercise program. Staff reviewed Mrs J's medical history (from her general practitioner) and noted that she had a history of osteoporosis, and had fractured a wrist in a fall 12 months earlier. RACF staff discussed hip protectors with Mrs J, highlighting how they appear to work in reducing forces on the hip in the case of a fall. They also showed her examples of the different types of hip protectors. Mrs J discussed buying hip protectors with her family, who bought them for her. Staff members used a checklist to record her adherence with hip protector use each day. Mrs J feels more confident in her walking around the RACF when wearing the hip protectors, and even wears them at night, as she usually needs to get up to the toilet once or twice a night.

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## 5.2 Vitamin D and calcium supplementation



### Recommendation

#### *Intervention*

- Vitamin D and calcium supplementation should be recommended as an intervention strategy to prevent falls in residents of residential aged care facilities. (Level I)<sup>5</sup>



### Good practice point

- Assess whether residents are receiving adequate sunlight for vitamin D production.

### 5.2.1 *Assessing adequacy of vitamin D*

Dieticians, nutrition and dietetic support staff, or nursing and medical staff can collect information on eating habits, food preferences, meal patterns, food intake and sunlight exposure. To do this, they can use:

- food preference records
- food and fluid intake records
- 25-hydroxyvitamin D (25(OH)D) blood levels.

### 5.2.2 *Ensuring minimum sun exposure to prevent vitamin D deficiency*

Osteoporosis Australia (in association with the Cancer Council Australia) recommends that for most older Australians, vitamin D deficiency can be prevented by 5–15 minutes exposure of the face and upper limbs to sunlight, four to six times per week – although deliberate exposure to sunlight between 10 am and 3 pm in the summer months for more than 15 minutes is not advised.

If this modest sunlight exposure is not possible, then a vitamin D supplement of at least 800 IU (10 g) per day is recommended.

### 5.2.3 *Assessing the need for vitamin D and calcium supplementation*

Health care professionals should consider the high possibility of vitamin D deficiency in people living in RACFs and supplement without doing routine blood tests. If there is uncertainty, 25(OH)D can be measured using a blood test.

For confirmed cases of vitamin D deficiency, supplementation with 3000–5000 IU per day for at least one month is required to replenish body stores (one 50 000 IU tablet daily for three days and then one tablet monthly). Increased availability of larger dose preparations of cholecalciferol (vitamin D<sub>3</sub>) would be a useful therapy in the case of severe deficiencies.

For most older people in long-term care in Australia, it is appropriate to supplement with 1000 IU vitamin D without measuring 25(OH)D vitamin D blood levels. This is based on the prevalence of deficiency, the low risk and the benefit shown when doing it in this untargeted way for hip fracture prevention.<sup>148–150</sup>

However, use calcium supplementation with caution in women older than 70 years of age, due to the possible association with cardiovascular events.<sup>151,152</sup> Dietary calcium should be encouraged if at all possible and a maximum supplementation dose of 500 mg per day considered if daily dietary intake does not reach 1000 mg.

### *5.2.4 Encouraging people to include high-calcium foods in their diet*

The food guidelines in Appendix 12 of the Falls Guidelines, which outline calcium and vitamin dietary suggestions and hints,<sup>153</sup> are useful for encouraging residents to include more calcium in their diet. Referral to a dietician may be appropriate if a resident is having trouble consuming adequate calcium, has lactose intolerance, does not include calcium as a normal part of their diet (culturally) or does not consume dairy foods (eg they follow a vegan diet).

### *5.2.5 Discouraging people from consuming foods that prevent calcium absorption*

Oral calcium intake needs to meet the recommended daily intake. To achieve this, discourage residents from consuming too many foodstuffs that lower or prevent calcium absorption (eg caffeine, soft drinks containing phosphoric acid). Instead, encourage them to include foods high in calcium in their diet.

Analysis of food intake records or diet history should show a daily intake of calcium of 800 mg for men and 1000 mg for women.<sup>153</sup>



### Case study

Mrs Q lives in a nursing home and has been falling frequently. Staff report that she has difficulty getting out of a chair and has notable proximal muscle weakness (a clinical manifestation of vitamin D deficiency). She eats a nutritionally balanced diet, including regular consumption of milk. She does not go outside but does 'catch some rays' in the sunroom, which has large glass windows. Unfortunately, glass absorbs nearly all ultraviolet B photons, which are required for vitamin D production. Blood tests confirmed vitamin D deficiency, which was corrected with oral supplementation. Other interventions were also included as part of a targeted multifactorial falls prevention program in response to the falls risk assessment.

## 5.3 Osteoporosis management



### Recommendations

#### *Assessment*

- Residents with a history of recurrent falls should be considered for a bone health check. Also, residents who sustain a minimal-trauma fracture should be assessed for their risk of falls.

#### *Intervention*

- Residents with diagnosed osteoporosis or a history of low-trauma fracture should be offered treatment for which there is evidence of benefit. (Level I)<sup>154</sup>
- Residential aged care facilities should establish protocols to increase the rate of osteoporosis treatment in residents who have sustained their first osteoporotic fracture. (Level IV)<sup>155</sup>



### Good practice points

- Strengthening and protecting bones will reduce the risk of injurious falls.
- In the case of recurrent fallers and those sustaining low-trauma fractures, health care professionals and care staff should consider strategies for optimising function, minimising a long lie on the floor, protecting bones, improving environmental safety and prescribing vitamin D.
- When using osteoporosis treatments, residents should be co-prescribed vitamin D with calcium.

### 5.3.1 Screening for osteoporosis

Screening for osteoporosis is important for minimising falls-related injuries. It is important to recognise that people sustaining low-trauma fractures after the age of 60 years probably have osteoporosis and an increased risk of subsequent fracture.<sup>156,157</sup> Health care professionals and care staff should consider bone densitometry and specific anti-osteoporosis therapy for people in this group. Also, older people with a history of recurrent falls should be considered for a bone health check.

In both cases (recurrent fallers and those sustaining low-trauma fractures), the health care team should consider strategies for optimising function, minimising a long lie on the floor, protecting bones, improving environmental safety and prescribing vitamin D.<sup>158,159</sup>

Postmenopausal women who have low bone density, or who have already had one fracture in their spine or wrist, should be treated with a bisphosphonate (such as risedronate) to reduce their risk of further fractures in their spine or hip.<sup>160</sup> Consider using bisphosphonates, strontium or raloxifene to reduce the risk of vertebral fractures and to increase bone density in older men at risk of osteoporosis (ie those with a low body mass index). Bisphosphonates work best in people with adequate vitamin D and calcium levels, and should therefore be co-prescribed.

RACFs should establish protocols to increase the rate of osteoporosis treatment in residents who have sustained their first osteoporotic fracture.<sup>155</sup>



#### Case study

Mrs N is an 85-year-old lady who lives in a residential aged care facility. She has a history of falling, and recently fell and fractured her hip. She thinks she has a family history of osteoporosis, and was treated for osteoporosis in hospital. On return to her aged care facility, Mrs N was treated by a physiotherapist using a graduated exercise program, beginning at a low intensity, with a goal of safe ambulation with the use of a frame. Mrs N was prescribed vitamin D and calcium supplementation and was taught about the use and availability of hip protectors.





# 6 Responding to falls



## Recommendation

### *Assessment*

- Staff of residential aged care facilities should complete a post-fall assessment for every resident who falls.



## Good practice points

- Residential aged care facility (RACF) staff should report and document all falls.
- It is better to ask a resident whether they remember the sensation of falling rather than whether they think that they blacked out, because many older people who have syncope are unsure whether they blacked out.
- RACF staff should follow the facility's post-fall protocol or guideline for managing residents immediately after a fall.
- After the immediate follow-up of a fall, review the fall. This should include trying to determine how and why a fall may have occurred, and implementing actions to reduce the risk of another fall.
- An in-depth analysis of the fall event (eg a root-cause analysis) is required if there has been a serious injury following a fall, or if there has been a death from a fall.

## 6.1 Immediate response to falls

The circumstances surrounding a fall are a critical part of care, because a fall may be the first and main indication of another, underlying and treatable problem. Residential aged care facility (RACF) staff should review every fall<sup>14</sup> and complete a falls incident report, including recommendations for the immediate and longer term care required.<sup>15</sup>

However, some information about the circumstances of a fall may be difficult to collect from the resident themselves, and may need to be sourced from staff, visitors and other residents.

RACFs should have their own falls incident policy, or follow a clinical practice guideline for preventing and responding to falls. The following checklist for RACF staff is a guide to what should be included in a falls incident policy.



### Checklist 1: Managing the resident immediately after a fall

#### *Offer basic life support and provide reassurance*

- Check for ongoing danger.
- Check whether the resident is responsive (eg responds to verbal or physical stimulus).
- Check the resident's airways, breathing and circulation.
- Reassure and comfort the resident.<sup>99,144</sup>

#### *Take baseline measurements*

- Conduct a preliminary assessment that includes taking baseline measurements of pulse, blood pressure, respiratory rate, oxygen saturation and blood sugar levels. If the resident has hit their head, or if their fall was unwitnessed, record neurological observations (eg using the Glasgow Coma Scale).<sup>144</sup> The RACF's incident policy should guide the staff member according to their level of training, including helping them to know when to call for assistance.

#### *Check for injuries*

- Check for signs of injury, including abrasion, contusion, laceration, fracture and head injury.<sup>99,124,144</sup>

#### *Move the resident*

- Assess whether it is safe to move the resident from their position, and identify any special considerations in moving them. Staff members should use a lifting device instead of trying to lift the resident on their own. Follow the RACF's policy or guideline on lifting.

#### *Monitor the resident*

- Observe residents who have fallen and who are taking anticoagulants or antiplatelets (blood-thinning medications) carefully, because they have an increased risk of bleeding and intracranial haemorrhage. Residents with a history of alcohol abuse may be more prone to bleeding. Contact the medical officer and provide relevant details.
- Ensure ongoing monitoring of the resident, because some injuries may not be apparent at the time of the fall.<sup>15,99</sup> Make sure RACF staff know the type, frequency and duration of the observations that are required.

### *Report the fall*

- Report all falls to a medical officer, even if injuries are not apparent.<sup>99,124</sup> The medical officer should assess and treat any injury, assess the conditions that may have caused the fall, and put any appropriate interventions in place. Staff may need to call for an ambulance to transfer the resident to hospital. In this case, the medical officer should provide transfer information, including details of the fall.
- Document all details in the person's medical record, including their appearance or response, evidence of injury, location of the fall, notification of their medical provider and actions taken.<sup>99,124</sup>
- Complete an incident reporting form for all falls,<sup>15,124,143,144</sup> regardless of where the fall occurred or whether the person was injured.
- Note any details of the fall when reporting the incident, including any recollections of the resident.<sup>124,144</sup> At a minimum, this should include the location and time of the fall, what the resident was doing immediately before they fell, the mechanisms of the fall (eg slip, trip, overbalance, dizziness), and whether they lost consciousness or had a conscious collapse.

### *Discuss the fall and future risk management*

- Communicate to all relevant staff, family and carers that the resident has fallen and has an increased risk of falling again.<sup>124</sup>
  - At the earliest opportunity, notify the person nominated to be contacted in case of an emergency.<sup>124,144</sup>
  - Discuss with the resident and their family the circumstances of the fall, its consequences and actions planned to reduce their risk of falling again.<sup>99</sup>
  - Assume that once a resident has fallen, they automatically have a high risk of falling again until they have been assessed.<sup>99</sup>
  - Follow local guidelines for identifying residents as being at increased risk of falling.
-

## 6.2 Post-fall follow-up

After the fall, determine how and why the fall may have occurred, to reduce the risk of another fall. The checklist in the following box is a guide to what steps should be included in an RACF's falls incident policy or practice guidelines.



### Checklist 2: Post-fall follow-up

- Investigate the cause of the fall, including assessing for delirium.
- Complete a falls risk assessment on the resident following a fall, because new risk factors may be present.<sup>15,99,124</sup>
- Review the implementation of existing falls prevention strategies, including standard falls prevention strategies for the resident.<sup>15,99,124</sup>
- Implement a targeted, individualised plan for daily care, based on a reassessment from a falls risk assessment tool. Implement multifactorial interventions as appropriate. These may include, but are not limited to, gait, balance and exercise programs, footwear review, medication review, hypotension management, environmental hazard modification and cardiovascular disorder treatment.<sup>161</sup> This will often involve referral to other members of the health care team (eg general practitioner, physiotherapist, podiatrist, dietician).
- Encourage the resident to resume their normal level of activity, because many older people are apprehensive after a fall and the fear of falling is a strong predictor of future falls.<sup>162</sup>
- Consider the use of injury-prevention interventions, such as vitamin D and calcium supplementation, and the use of hip protectors.<sup>15,99,124</sup>
- Consider investigations for osteoporosis in the presence of low-trauma fractures.
- Ensure effective communication of assessment and management recommendations to everyone involved.<sup>15,99,124</sup>

## 6.3 Analysing the fall

A more in-depth analysis of the fall may be required, particularly where there has been a serious injury or adverse outcome for the older person. A review of a serious fall can address both individual and broader system issues to provide a greater understanding of the cause and future prevention. This is sometimes known as a root-cause analysis. A root-cause analysis is always required if a fall results in serious injury or death. In some jurisdictions, a fall in an RACF that results in death must be reported to the state coroner.

Each RACF should have a falls review process in place.

## 6.4 Reporting and recording falls

Accurate reporting of falls will only occur in a culture that is fair and just – that is, a 'no blame culture'. Staff often feel anxious when having to complete an incident form and can associate the fall with feelings of guilt and blame. For accurate reporting of falls, the leaders in the facility must promote incident reporting as a part of the quality improvement process, rather than a punitive tool to identify potential staff negligence.<sup>163</sup> This requires a fair and just culture for achieving safe and high-quality care.

For high-quality care and risk management, information about falls must be collected and collated to monitor falls incidence, identify fall patterns, identify ways of preventing future falls and provide feedback on the effectiveness of falls prevention programs.<sup>144</sup> Feedback should also be provided to staff regularly (eg monthly) so that local trends can be identified and addressed as part of the routine, continuous quality-improvement plan. Any data collected should be used to inform changes in RACF practice aimed at reducing resident falls rates. The minimum dataset that should be collected should be determined by each facility or organisation; however, the following checklist provides some examples.



### Checklist 3: Data that may form part of falls reporting

- What was the type of fall (eg slip, trip, bumping into or falling on an object)?<sup>15</sup>
- What was the activity at the time of the fall (eg attempting to stand, walking)?
- Did the resident depend on aids or staff?
- Is there any relevant information about clothing, footwear, eyewear and mobility aids used at the time of the fall?<sup>15</sup>
- Were any restraints being used?
- Did the resident have any recent change in their medications that might be associated with falls risk?
- Was there any staff supervision at the time of the fall?
- Were there any external factors that may have contributed to the fall, such as environmental conditions (eg floor, lighting, clutter<sup>15</sup>) or staffing levels?
- What was the resident's status after the fall (eg baseline observations, injuries)?
- What interventions will be implemented after the fall, and what medical treatment is required?
- What was the resident's perception of their fall, including their description of any preceding sensations or symptoms,<sup>15</sup> and what do they think may have prevented the fall?
- Were there any witnesses to the fall?
- Are there any other comments?

This information should be completed whenever a fall or near miss occurs in an RACF. A generic incident form may already be in use; however, RACFs may need to develop a falls-specific incident form to focus on the details required to monitor falls incidences and management plans. Any of this information not being collected can be captured by incorporating it into existing incident reports.

## 6.5 Comprehensive assessment of falls

People who fall repeatedly and people who are prone to injurious falls require a comprehensive and detailed assessment, in addition to their falls risk assessment.<sup>161</sup> When RACF staff believe that a more detailed assessment is necessary, they should discuss it with the resident's general practitioner and, if appropriate, arrange for a referral to a specialist (eg geriatrician) or to a falls clinic.

## 6.6 Loss of confidence after a fall

A common but often overlooked consequence of a fall is a loss of confidence in walking or fear of falling,<sup>164</sup> which can occur even in the absence of any injury. In the period after a fall, RACF staff should observe the resident to note any change in their usual activity that might indicate the presence of, or increase in, fear of falling. Discussion with the resident about any concerns about falling might also be an opportunity to identify its presence.

Common approaches to improving loss of confidence or fear of falling in RACF settings include participation in a balance and mobility training exercise program, and other falls prevention activities, including the use of hip protectors.<sup>165</sup>

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# Notes







