13.2 Principles of care

13.2.1 Screening vision

Hospitalisation provides an opportunity for systematic screening for visual problems that have an impact both in the hospital setting and after discharge.

Methods of screening vision include the following:

• Visual function can be screened as part of the St Thomas Risk Assessment Tool in Falling Elderly In-patients (STRATIFY): 'Is the patient visually impaired to the extent that everyday function is affected?'[75] (See Chapter 5 on screening and assessment for more information.)

• A randomised controlled trial of falls risk factor prevention included a vision test as part of a multifactorial intervention. The trial concluded that vision could be tested in a quick and simple way, by checking a patient's ability to recognise an everyday object (eg a pen, key or watch) from a distance of two metres.[37] However, this test will only pick up major vision problems.

The following additional visual function assessments can also be used as good practice:

• Ask the patient about their vision and record any visual complaints and history of eye problems and eye disease.

• Check for signs of visual deterioration. These can include an inability to see detail in objects, read (including avoiding reading) or watch television; a propensity to spill drinks; or a propensity to bump into objects.

• Measure visual acuity or contrast sensitivity quantitatively using a standard eye chart (eg a Snellen eye chart) or the Melbourne Edge Test (MET), respectively (see Table 13.1).

• Check for signs of visual field loss using a confrontation test (see Table 13.1) and refer for a full automated perimetry test by an optometrist or ophthalmologist if any defects are found. Large prospective studies found that an increase in falls occurred when there was a loss of field sensitivity, rather than loss of visual acuity and contrast sensitivity.[259]

Table 13.1 summarises the characteristics of eye-screening tests.

Table 13.1 Characteristics of eye-screening tests

Snellen eye chart (for testing visual acuity)	
Description	Standardised eye test of visual acuity.
	Comprises a series of symbols (usually letters) in lines of gradually decreasing sizes.
	Participant is asked to read the chart from a distance of 6 m 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).
	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).
	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 m to test visual acuity).
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)[97]	
Description	The test presents 20 circular patches containing edges with reducing contrast.
	Correct identification of the orientation of the edges on the patches provides a measure of contrast sensitivity in decibel units, where $dB = -10\log_{10}$ contrast, where contrast defines the ratio of luminance levels of the two halves of the circular patch.
Time needed	5 minutes
Criterion	Score of less than 18/24 indicates visual impairment; however, the results are age dependent.[268]
Confrontation Visual Field Test[269]	
Description	Crude test of visual fields.
	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 their hand and stares at the examiner's nose.
	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?' 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, the test should be repeated and then recorded. If the participant moves fixation to view the peripheral targets, repeat the presentation.
	Results are recorded as finger counting fields R√ and L√ if the patient correctly reports the number of fingers presented. For those who fail this screening, a diagram should be drawn to indicate the part of the field in which the participant made an error.
Time needed	4 minutes
Criterion	If the participant incorrectly reports the number of fingers held up in either eye, they should be referred for a full visual field test.

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

13.2.2 Providing interventions

The following interventions should be applied:

- Make sure that patients have their prescription spectacles with them in hospital.[37]
- Where a previously undiagnosed visual problem is identified, refer the patient to an optometrist or ophthalmologist for further evaluation.[37]
- Provide adequate lighting, contrast and other environmental factors to help maximise visual cues.[43]

Additionally, make sure that if the person wears spectacles, they are clean, in good repair, and fitted properly. Encourage people with impaired vision to seek help when moving away from their immediate bed surrounds.

13.2.3 Discharge planning

If an undiagnosed visual problem is detected, encourage the patient to see an eye specialist when they are discharged from hospital. Healey et al (2004) suggested referral to an optometrist if the patient has lost their glasses, and to an ophthalmologist if there is no known reason for poor vision.[37]

When a visual deficit is identified, the health care team should seek a diagnosis and offer an intervention. Several visual improvement interventions should be considered after discharge from the hospital:

- *Expedited cataract surgery.* This is the only evidence based intervention to date that has been shown to be effective in reducing both falls and fractures in older people.[251,252]
- *Occupational therapy interventions* in people with moderate to severe visual impairment, to manage the function and safety aspects of visual impairment. 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)[270,271] (see Chapter 14 on environmental considerations for more information).
- *Prescription of optimal spectacle correction, with caution.* Make sure the patient'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.[249] 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 increased falls in older people who live in the community, doubling the risk of falls.[250] These results may also apply to older people in a hospital setting. The health care team should advise patients with a history of falls 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.[272]
- Education. Educating health care workers on how to manage patients with reduced visual function may help to reduce the risk of falls.

✳ Point of interest: mobility training

Vision Australia[†] specialises in safe mobility training for visually impaired people.

✚ Case study

Mrs J is a 75-year-old hospital inpatient who fell while walking over a step in a doorway. On admission to the ward, Mrs J was assessed by an ophthalmologist, who found that Mrs J had severe visual impairment caused by macular degeneration. Hospital staff inspected Mrs J's spectacles for scratches, and made sure that they were clean and fitted her correctly. Staff also made sure that there was adequate lighting in her room at all times. Mrs J was given clear instructions about how to move around and was encouraged to call for help when walking in unfamiliar surroundings. On discharge, she was advised to have a full eye examination to ensure optimal spectacle correction. Given her severe visual impairment, Mrs J was also referred for an occupational therapy home assessment.

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† http://www.visionaustralia.org.au

13.3 Special considerations

13.3.1 Cognitive impairment

Where possible, patients with cognitive impairment should have their vision tested using standard testing procedures. Where this is not possible, visual acuity can be assessed using a Landolt C or Tumbling E chart. These tests contains near-vision, distance and reduced Snellen tests, and can be used to measure and record visual acuity in the same way as standard letter charts.

The Landolt C is a standardised symbol (a ring with a gap, similar to a capital C) used to test vision. The symbol is displayed with the gap in various orientations (top, bottom, left, right), and the person being tested must say which direction it faces. The Tumbling E chart is similar, but uses the letter E in different orientations.

13.3.2 Rural and remote settings

Health care practitioners or carers can contact their local Optometric Association Australia in their state or territory for an up-to-date list of optometrists providing services in rural and remote areas. The patient's general practitioner or optometrist can provide a referral to a local ophthalmologist. Alternatively, contact the Royal Australian and New Zealand College of Ophthalmologists on +61 2 9690 1001. The strategies outlined earlier in this chapter should be implemented before a referral to an ophthalmologist is made.

13.3.3 Indigenous and culturally and linguistically diverse groups

Where appropriate, visual acuity can be measured for Indigenous patients using a culturally appropriate chart known as the 'Turtle Chart',[273] which has a series of turtles of different sizes and orientations. Similarly, there is a series of culturally appropriate brochures and posters that describe different eye diseases and conditions, and different types of spectacle corrections.

13.3.4 Patients with limited mobility

Home visits by optometrists or ophthalmologists may be necessary for housebound older people. The Optometric Association Australia in each state or territory will provide a current list of optometrists willing to provide such services.

13.4 Economic evaluation

No economic evaluations were identified that specifically considered interventions for vision in the hospital setting. Some community interventions have been found to be effective and cost effective; however, it is unclear whether the results are applicable to the hospital setting (see Chapter 13 in the community guidelines for more information).

✳ Additional information

The following organisations may be helpful:

- Optometrists Association Australia:
  Phone: 03 9668 8500
  Fax: 03 9663 7478
  Email: oaanat@optometrists.asn.au
  http://www.optometrists.asn.au (contains details for state and territory divisions)
- Vision Australia provides services for people with low vision and blindness across Australia:
  http://www.visionaustralia.org.au
- Macular Degeneration Foundation promotes awareness of macular degeneration and provides resources and information:
  http://www.mdfoundation.com.au
- Guide dog associations in Australia help people with visual impairment to gain freedom and independence to move safely and confidently around the community and to fulfil their potential:
  http://www.guidedogsaustralia.com