



THE COLLEGE  
OF OPTOMETRISTS



# The Importance of Vision in Preventing Falls

Endorsed by



Royal College of  
General Practitioners

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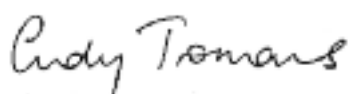
# Introduction

Although many factors may be linked to falls it has been shown that problems with vision are amongst the more important. This publication provides optometrists and other health care professionals with a comprehensive overview of the importance of vision in preventing falls.

Every year more than three million people aged over 65 will have a fall. Falls are the leading cause of disability and the leading cause of death from injury among people over 75 in the UK. Falls also place a significant burden on society – it has been estimated that falls cost the NHS around £2.3 billion per year. The consequences of a fall can be devastating, but falls, like failing eyesight are not an inevitable consequence of ageing – and much can be done to prevent the risks.

An eye exam can help detect ocular problems before any long lasting visual deterioration may take place, as well as helping to prevent falls and improving an older person's quality of life and peace of mind significantly. It is vital that people of 60 years and older are aware of their entitlement to a free NHS sight test and know how to access this service. We also need to raise awareness of the domiciliary service; if a patient is housebound and unable to access a community practice an NHS sight test can be provided free of charge at home.

We are delighted that this joint College of Optometrists/British Geriatrics Society publication has been endorsed by Age UK and the Royal College of General Practitioners. Working together, we can reduce the risk of falls in older people and raise awareness of the role of vision in preventing falls.



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- 1.1 Standard Six of the National Service Framework for Older People identified a target of reducing the number of falls. Falls are also referenced in relation to Domains Three and Five of the NHS Outcomes Framework for 2012/13<sup>2</sup>.  
3,4,5,6,7,8,9,10,11,12,13,
- 1.2 Although the causes of falls are often multifactorial, both central and peripheral visual impairment have been shown to be associated with falls and hip fractures<sup>2-12</sup>. The impact of visual impairment on fall risk is higher when accompanied with other sensory and balance impairments, so it is particularly important to check whether poor vision is accompanied by other impairments<sup>14</sup>. In addition to poor visual acuity, reduced visual field, impaired contrast sensitivity, impaired stereopsis (depth perception) and cataract may explain the association between vision and falls<sup>3</sup> and visually impaired people have been found to be three times more likely to fall if they were physically inactive<sup>15</sup>.
- 1.3 Hip fractures alone, which cause significant morbidity, mortality and cost to health and social services, have been linked to visual impairment and to individual measures of vision such as reduced visual acuity, contrast sensitivity and visual field<sup>16</sup>. One study found that in hip fracture patients, 33% were visually impaired, (6/18 or worse in both eyes) and 58% had a distance visual acuity of 6/18 or worse in at least one eye<sup>17</sup>.
- 1.4 It has been estimated that of the cost of treating all accidental falls in the UK in 1999, £269 million was spent on the population with visual impairment and £128 million was directly attributable to visual impairment<sup>18</sup>.
- 1.5 Visual impairment is defined as existing when the level of vision is below that which the individual requires for his or her everyday tasks. A common cut off point is taken as a binocular visual acuity of 6/12 or 6/18 as used in the MRC study<sup>19</sup>. 64% of registered severely visually impaired and 66% of registered visually impaired people are aged 75 or over<sup>20</sup>.
- 1.6 The National Institute for Health and Clinical Excellence has emphasised the importance of visual assessment in patients who have fallen<sup>21</sup>. Despite this a National Audit showed that only 50% of sites employed a proforma to prompt standardised visual acuity assessment<sup>22</sup>.

## Causes of Visual Impairment

- 2.1 **Refractive errors** – Under corrected refractive error remains one of the two major causes of treatable visual impairment<sup>23</sup> and can be resolved by the provision of updated spectacles. Refractive error may be present with or without coexisting eye disease. Between 7 and 34% of older people living in developed countries have visual impairment (VI) that could simply be cured by appropriate spectacles<sup>24</sup>.
- 2.2 **Cataracts** - are the other major cause of treatable visual impairment<sup>24</sup>. Cataracts are an important risk factor for falls<sup>25</sup> and studies have shown that cataract surgery can prevent falls<sup>26, 27</sup>. Removal of the cataract from the first eye can reduce the rate of falls and removal from the second eye has benefits in terms of improving visual symptoms and quality of life<sup>28</sup>.
- 2.3 **Diabetes** - is an important cause of visual impairment in older people and in 2002 diabetic retinopathy was the most frequently reported case of serious visual loss in people of working age in Europe<sup>29</sup>. The incidence of blindness may be significantly reduced by early and appropriate management<sup>30, 31</sup>. It has been found that 9.9% of people in residential or nursing homes had diabetes<sup>32</sup>. There is a National Programme in place to ensure regular screening for diabetic retinopathy which has the aim of reducing the risk of sight loss amongst people with diabetes<sup>33</sup>. In addition, people with diabetes who have peripheral neuropathy can have very poor balance control<sup>34</sup>. They also have a greater risk of falls<sup>35</sup>, particularly if they have foot problems<sup>36</sup>.
- 2.4 **Glaucoma** – around 10% of cases of blindness are due to glaucoma<sup>19, 37, 38, 39</sup>. Optometrists are responsible for detecting 80% of new cases<sup>28</sup>. Early detection is important to prevent irreversible visual loss<sup>40</sup>. Although a 2005 review found that there is no clear evidence to support an association between glaucoma and an increased risk of falls<sup>23</sup> a more recent paper found that there is an increased risk of falls in patients with glaucoma<sup>41</sup>. Primary open angle glaucoma is the leading cause of visual field loss in the older population<sup>42</sup> and visual field loss is associated with falls<sup>43</sup> (see below).
- 2.5 **Macular degeneration** – This most commonly affects people who are over 50. Around 30% of people who are over 75 have early signs of AMD, and about 7% have more advanced AMD<sup>44</sup>. There is a significantly increased incidence of age-related maculopathy lesions with age (more so in women than in men)<sup>45, 46</sup>. Treatment for wet AMD has improved considerably in recent years but AMD is still the leading cause of visual impairment in the UK, although peripheral vision is maintained. Older women with AMD have been found to have a greater risk of falls<sup>47, 48</sup>, and people with AMD have also been shown to have poor balance control and gait<sup>49, 50</sup>. It is therefore important that these patients are provided with appropriate advice on fall prevention measures.
- 2.6 **Visual field loss** – Visual impairment is not only caused by visual acuity loss. The incidence of visual field loss increases with age. Visual field loss can contribute considerably to the overall burden of visual impairment and blindness. The statistics on the incidence of visual field loss on Certificates of Visual Impairment (CVI) forms are not gathered nationally, but in a population of adults aged 40-98 years nearly three times as many people were visually impaired because of visual field loss than visual acuity loss<sup>51</sup>. In a survey of 2374 individuals where visual acuity, contrast sensitivity, visual field and stereoacuity were tested it was found that peripheral visual field loss was the primary vision component that increases the risk of falls<sup>52</sup>. It is therefore important both to try and prevent visual field loss, by the prevention of stroke and the early detection of conditions such as glaucoma, but also to consider fall prevention strategies in people with visual field loss.

- 3.1 A number of studies have linked the incidence of falls with bifocal/varifocal spectacle wear<sup>54, 55, 56</sup> even in long term multifocal wearers<sup>56</sup>. It has been suggested that the provision of single vision lenses (to wear in outdoor and unfamiliar settings) for older people who take part in regular outdoor activities is an effective falls prevention strategy<sup>52</sup>. Optometrists and dispensing opticians should discuss this with patients, where relevant.
- 3.2 A randomised controlled trial of optometric intervention<sup>57</sup> found that the intervention group had an increased falls rate compared with the control. The study had several limitations in that the control group was more frail than the intervention group at baseline (and so may have spent less time walking about or have been more cautious). They were also left to their own devices so that they could have received good, if not better, care than the intervention group. In addition the study did not control for multifocal wear use in the two groups. The authors suggested that their findings were due to some people having difficulty in adapting to new spectacles. The intervention group may also have been able to see better, and so ventured out more, therefore being more at risk of falls. Adaptation difficulties are particularly likely given that the intervention group were prescribed the full subjective refraction result and the change in refractive correction may have been too large for some participants to adapt to.
- 3.3 Older people find it much harder to adapt to new spectacles than do younger people. The magnification effects caused by a change in prescription can have a profound effect on adaptive gait (with myopic shifts making objects seem smaller and further away and hyperopic shifts making things look bigger and closer). This greatly affects gait when stepping onto stairs and steps<sup>58</sup>. Magnification effects with new spectacles require changes to the oculo-vestibular reflex and associated reflexes (the reflexes that link head movements to eye movements, until these are adapted to, the new spectacles seem to make the world 'swim') and astigmatic changes, particularly if large and/or oblique can make floors and walls slope. Large changes (more than 0.75D) in refractive correction for older people should therefore be avoided if possible<sup>59, 60, 61</sup>. Patients should be warned of adaptation problems with their new spectacles and advised to wear them in the home first to get used to them.

## Problems in the take up and provision of services

- 4.1 People aged 60 and over are eligible for a regular free NHS sight test. It is important that older people and health care professionals are aware of this.
- 4.2 Prevalence studies demonstrate that in a significant proportion of those older people with visual impairment, eye disease is undetected and untreated<sup>19</sup>.
- 4.3 There is evidence that health inequalities exist and that older people from low socio-economic groups are less likely to avail themselves of primary care ophthalmic services. Severe visual problems are therefore more likely to remain unrecognised and untreated<sup>62</sup>. This was specifically mentioned by Sir Donald Acheson in his report published in 1998, "Independent Inquiry into Inequalities in Health". The Government is committed to tackling health inequalities<sup>64</sup> and has published a report on the 10 years from the Acheson report<sup>65</sup>.
- 4.4 Older patients who become aware of visual difficulties may be reluctant to attend for a routine eye examination, either for financial reasons or for fear of being told bad news or because they feel intimidated by the eye examination process<sup>66</sup>. They may feel that poor vision is an inevitable consequence of ageing. This reticence can be accentuated in some ethnic groups who are more at risk of certain conditions such as diabetes and glaucoma.
- 4.5 In the UK, at 31 March 2008 around 153 000 were registered as severely sight impaired (SSI) and around 156 000 were registered as sight impaired (SI)<sup>20</sup>. Although one review estimated that the numbers eligible to be registered because of permanent visual loss are within 20% of those actually registered<sup>67</sup> it is likely that the number of people registered is a considerable underestimate of those with registerable sight loss. It has been suggested that the number of people with a sight problem in the UK is actually closer to one million or even up to two million<sup>68</sup>. In a sample of patients seen in a large UK teaching hospital it was found that 45% of patients who were eligible for registration as SI or SSI were unregistered and another 40% appeared to have been inappropriately registered. SI patients were more likely to be unregistered than SSI ones and patients from ethnic minorities were three times more likely to be unregistered than white patients<sup>69</sup>. Registration as SSI gives access to financial and other benefits. Although registration as SI provides little assistance, it alerts the relevant authority as to the individual's visual problems. The Eyecare Services Steering Group has made recommendations on the provision of services for people with visual impairment<sup>70</sup>.
- 4.6 People in residential care and nursing homes are at an increased risk of falls<sup>2,71</sup>, and it has been estimated that the falls incidence in nursing care facilities is three times that in the community. Fall rates per bed per year have been reported as 1.4<sup>72</sup> or 1.5<sup>73,74</sup>. These people are at risk of having their eye problems overlooked. NHS domiciliary sight tests are available free of charge to those unable to attend community optometric practice because of physical or mental disability.

**VISUAL IMPAIRMENT**

- 5.1 All older people undergoing a falls assessment should be screened for visual impairment. The minimum standard is a test of visual acuity using a Snellen chart, and some assessment of the visual field. Visual acuity of 6/12 or worse denotes visual impairment.
- 5.2 Those people identified as suffering from visual impairment should have a full eye examination by an optometrist and all older people should be encouraged to have regular eye examinations. The optometry assessment could take place in a variety of community, hospital and voluntary sector settings. The mechanism for achieving this should be agreed locally.
- 5.3 People in residential and nursing homes are a particularly high-risk group for falls<sup>2,52</sup> and this should be reflected in the local arrangements for screening and assessment of visual impairment.
- 5.4 The locally agreed policies should include partnerships with voluntary organisations. Patient information is produced by the organisations such as RNIB, the Macular Disease Society and the International Glaucoma Association. Involvement of other organisations such as Age UK could help in the dissemination of this advice. Such information should also be available in other settings including primary and secondary care, optical practices and via NHS Choices.
- 5.5 Older people and health care professionals may be unaware of the benefits that are available to the visually impaired. Mechanisms should be developed locally to encourage awareness and uptake of these benefits.
- 5.6 For older people with impaired vision, whether treatable or not, measures should be taken to optimise the visual environment, remove physical hazards, and reduce other fall risk factors. Adding treatment of poor vision to exercise and hazard management in the home has been shown to produce an additional 14% reduction in the annual fall rate, compared to no intervention<sup>75</sup>.

**SPECTACLE USE**

- 5.7 Optometrists and dispensing opticians should consider supplying an additional pair of single vision spectacles (to wear in outdoor and unfamiliar settings) for older people who take part in regular outdoor activities and wear bifocals or varifocals<sup>53</sup>.
- 5.8 Optometrists should – if possible – avoid large changes to the refractive correction in older people. They should also warn older patients of adaptation problems with new spectacles and should advise patients to wear them in the home to get used to them first.

**AUDIT AND COST -EFFECTIVENESS**

- 5.9 Audit tools should be developed and used to test the effectiveness of the locally agreed services.
- 5.10 Important areas for future research include the cost-effectiveness evaluation of screening for visual impairment; intervention studies of treating visual impairment, including cataract surgery and refractive error correction, in reducing falls, and qualitative studies to identify the barriers that prevent older people accessing eye services are also required.

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