

# Assessing Vision in Elderly Patients Admitted to Hospital Following a Fall:

A Quality Improvement Project

## **Abstract**

**Introduction:** Falls are a major cause of morbidity and mortality in older people, and those with reduced visual acuity are twice as likely to fall as those with normal eyesight. Accordingly, NICE guidelines recommend assessment of vision as part of a multi-factorial risk assessment in older people, who present for medical attention, because of a fall.

**Methods:** We included all patients admitted to a senior health ward at St George's hospital because of a fall. A baseline audit was conducted in May 2020. Our primary intervention was a departmental teaching session with subsequent first cycle data. We trialled the 'Look out! Bedside vision check for falls prevention' recommended by the Royal College of Physicians. Our secondary intervention was designing an 'initial assessment' proforma to include a section for sensory impairment followed by a second cycle data collection.

**Results:** Our initial results showed that none of the 24 patients admitted with a fall had any form of documented visual assessment. Using a simple bedside vision check tool, we found 22% (n=2) of screened patients had significantly impaired vision. Following our teaching session, 50% (n=7) of patients had some form of visual assessment on admission and after introduction of the proforma this increased to 56% (n=5). Visual risk factors were identified in multiple patients, including outdated prescriptions for corrective glasses.

**Discussion:** Identifying reversible visual risk factors may reduce recurrent falls and subsequent complications as well as hospital admissions in older patients. A teaching session was found to be effective, however a 'proforma' may encourage more sustainable improvements. The reduction in ophthalmology and optometry services during the Covid-19 pandemic will inevitably increase prevalence of visual risk factors. Effects including delayed eyesight tests and cataract operations. It is therefore more important now than ever, to ensure bedside assessment of vision in older adults presenting to hospital, with a fall and proactively in falls prevention strategies.

## **Keywords**

Fall, visual impairment, older people

## **Introduction**

Falls are a major cause of morbidity and mortality in older people.<sup>1</sup> It is estimated that one-third of people aged 65 years or older fall each year, and that in half of these cases falls are recurrent.<sup>2,3</sup> Falls are a major cause of injury-related hospitalisation in this age group and the resulting injuries lead to disability, loss of independence and increased mortality.<sup>4,5</sup> In addition to the human cost of falling, falls are estimated to cost the UK National Health Service (NHS) more than £2.3 billion a year.<sup>6</sup>

Impaired vision is an important and independent risk factor for falls.<sup>7</sup> People with impaired vision are twice as likely to fall as those with normal eyesight.<sup>8</sup> Notably, impairments in visual acuity, stereopsis, contrast sensitivity or visual fields, have all been consistently reported to increase the likelihood of falling.<sup>7</sup> Unsuitable spectacle prescriptions have also been identified as a risk factor for falling.<sup>7</sup> Of note, multifocal glasses (most common of which are bifocals) have been shown to increase risk of falls outside the home and walking up and downstairs.<sup>9</sup> Considering this, current guidelines by the National

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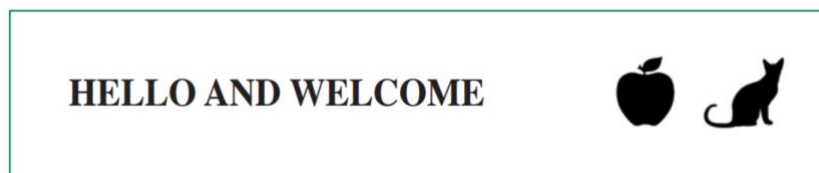
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Institute of Health and Clinical Excellence (NICE) recommend assessment of vision as part of a multi-factorial risk assessment in all older people, who present for medical attention because of a fall.<sup>6</sup>

Despite the evidence and recommendations, most patients do not have their vision assessed when admitted to hospital, due to a fall. The National Audit of Inpatient Falls (NAIF) report in 2015 recommended that all patients over the age of 65, should have a visual assessment at admission but found that less than half had a vision assessment when they went into hospital.<sup>10</sup> Consequently, the 'Look out! Bedside

vision check for falls prevention' was designed by NAIF in collaboration with partners including the Royal College and Ophthalmologists and Royal College of Physicians.<sup>11</sup> This tool aims to support clinical staff in assessing vision impairment in older people who have had falls, and consists of a mixture of questions and visual aids to help clinicians check eyesight at the patients' bedside. The tool includes a brief visual history, a tool to check near and distance vision (Fig. 1) and prompts to check eye movements and visual fields to confrontation.

## Distance vision check image 1



## Near vision check image 2



### Disclaimer

These checks are designed to be printed on A4 size paper. Image 1 should be able to be seen at a bed length (2 metres) and image 2 at usual reading distance for a book (bent arm's length), both with glasses on if usually worn. These checks are not intended to be diagnostic, but are a guide to near or distance vision.

Figure 1. Distance and near vision check images used in the 'Look out! Bedside vision check for falls prevention'(11)

Despite the advent of tools to aid simple bedside vision assessment, basic assessment of vision remains an area for significant improvement in the multi-

factorial risk assessment in older patients presenting with a fall. The reasons for this are probably related to how busy clinicians assessing these patients are, and

limited access to the bedside tools needed to assess vision.

The primary purpose of our audit was initially to assess whether we were achieving the recommended standard for vision assessment in older patients admitted to a senior health ward with a fall. Based on NICE guidelines and the NAIF report 2015, the audit standard was that all patients over the age of 65 years, should have a visual assessment on admission.

Our aim was to then evaluate effect of simple interventions on visual assessment of patients admitted to a senior health ward with a fall. These interventions included a departmental teaching

session and design and implementation of an assessment proforma.

**Methods**

The project was designed and undertaken by doctors on the ward and included all patients admitted to a senior health ward at St George’s University Hospital due to a fall. Data was collected by reviewing the documentation on the electronic patient record (iCLIP – Cerner Millennium) with focus on the admission clerking and the initial consultant assessment after transfer to the ward. The timeline of the quality improvement project (QIP) is illustrated in figure 2.

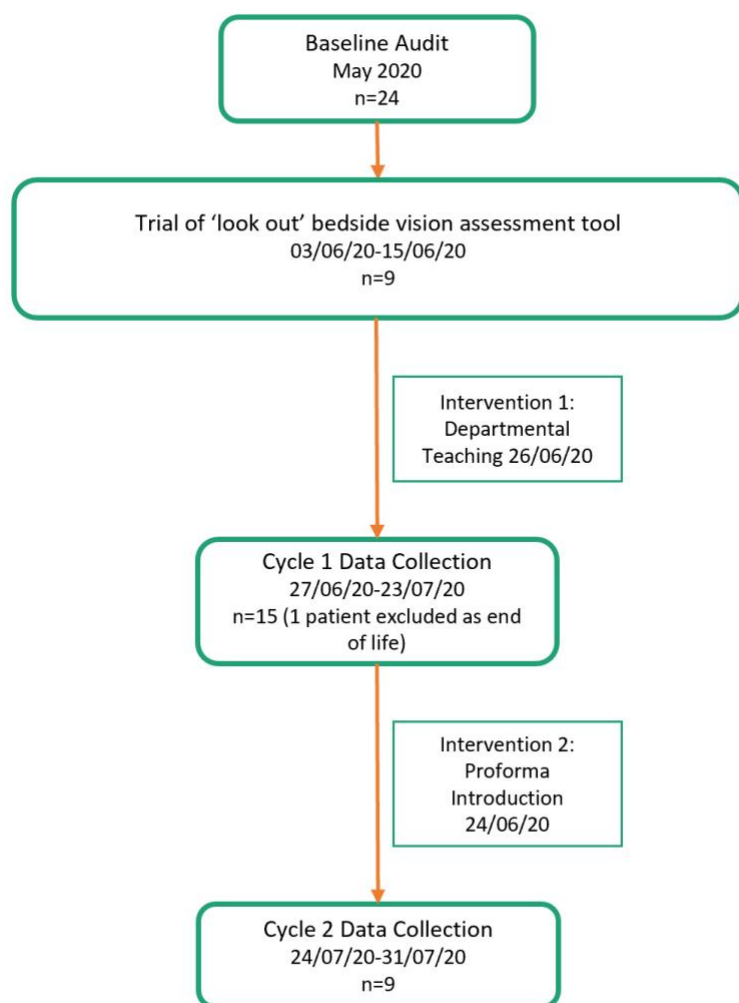


Figure 2. Quality Improvement Project Outline

A baseline audit was conducted in May 2020 to assess whether patients in this group had any form of visual assessment documented upon admission to the ward. This included 24 patients (aged 74-97).

The junior doctors then trialled the ‘Look out! Bedside vision check for falls prevention’ tool between 03/06/20-15/06/20 to identify the prevalence of

unidentified visual impairment amongst inpatients who had been admitted to the ward with a fall. This included 9 patients (75-89 years). We recorded a brief history (including last eye check and whether they have up to date glasses within 6 months), distance vision, near vision, eye movements and visual fields to confrontation.

Following the trial of the vision check tool we carried out our primary intervention. This was a departmental teaching session on 26/06/20, attended by doctors across all senior health wards in the hospital, where we presented the findings of the baseline audit and delivered practical training on use of the bedside vision assessment tool. First cycle data was collected between 27/06/20-23/07/20. This included 15 patients (aged 71-103 years), 1 patient was excluded due to being at the end of life.

Our second intervention was introducing an 'initial assessment' proforma which specifically included a section for sensory impairment. The second cycle of data collection took place between 24/07/20 – 31/07/20. This included 9 patients (70-98 years).

### Results

In the baseline audit, we found that none of the 24 patients admitted to the ward with a fall, had any form of visual assessment documented. Using the bedside vision assessment tool, we found that 22% (n=2) of screened patients had significantly impaired vision

which had previously been unidentified. Notably, one patient's visual acuity was reduced to counting fingers. The second patient had significant bitemporal hemianopia and was wearing bifocal glasses. A further 44% (n=4) had mild to moderate impairment of visual acuity. These included one patient with reduced near and distance vision (able to read large letters at near distance only), one patient with reduced near and distance vision in left eye and two patients with reduced near vision only.

Following the primary intervention (departmental teaching session), 50% (n=7) of patients admitted to the ward with a fall during the specified period had some form of visual assessment documented on admission (Fig 3). Following the secondary intervention (introduction of a proforma), 56% (n=5) of patients admitted to the ward with a fall during the specified period had some form of visual assessment documented on admission (Fig 4).

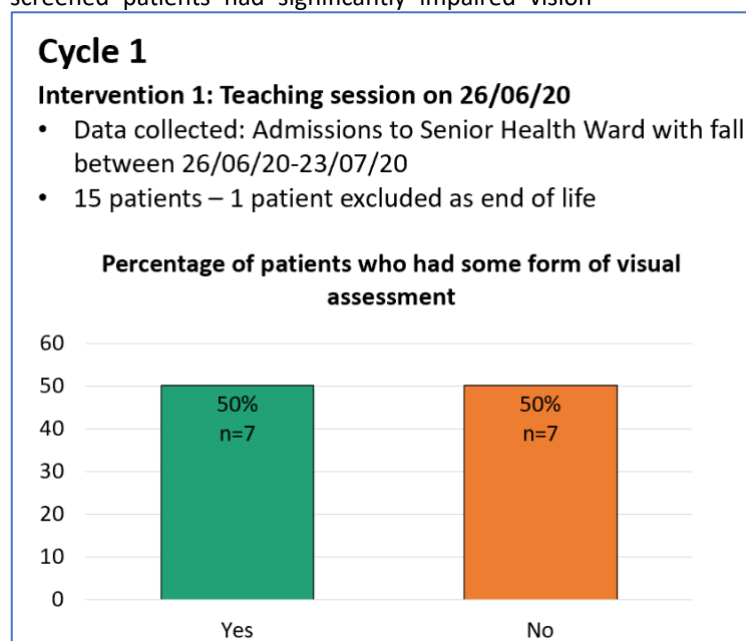


Figure 3. Results of intervention 1 – departmental teaching session

## Cycle 2

### Intervention 2: Introduction of an 'initial assessment' proforma

- Data collected: Admissions to Senior Health Ward with fall between 24/07/20 – 31/07/20 (duration limited by changeover of doctors)
- 9 patients

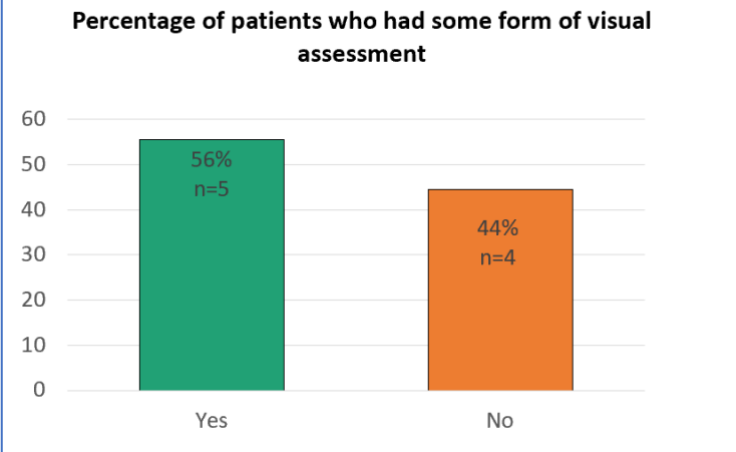


Figure 4. Results of intervention 2 – introduction of 'initial assessment' proforma

Visual risk factors identified and documented in the two cycles included outdated glasses prescription and significant visual field defects.

## Discussion

With an ageing population, there will be an inevitable prevalence of age-related visual impairment. Some causes, including age-related macular degeneration (AMD) and glaucoma, are associated with progressive decline in visual function. However, a substantial portion of visual impairment in older people can be attributed to correctable causes, such as under-corrected refractive errors and/or cataracts.<sup>12</sup>

Given that visual risk factors are significant and modifiable for prevention of falls in older patients, identifying these in a timely fashion may reduce recurrent falls and hospital admissions in this patient group. Despite this, results of our baseline audit found that the majority of older patients do not have any documented vision assessment when admitted to hospital because of a fall.<sup>10</sup>

One suggested barrier is difficulty in finding a standardised approach for clinicians to basic vision assessment that is achievable in an acute hospital setting.<sup>10</sup> As a result, simple tools such as the 'Look out! Bedside vision check for falls prevention' have been designed and created to support busy clinical staff in assessing vision impairment in older people. Using this tool, we identified significant visual impairment amongst inpatients on the ward who had been admitted with a fall which had not previously been

noted at any point during admission. One patient's visual acuity was reduced to counting fingers and another patient had significant bitemporal hemianopia and was wearing bifocal glasses which are a known risk factor for falls in older patients. The duration of assessment using this tool ranged from three to five minutes and the tool is designed for use by doctors, nurses or therapists at the bedside.

The improvement in visual assessment following our primary intervention, showed that a departmental teaching session could be an effective intervention. Our teaching session was attended by doctors as the primary aim of our project was to evaluate the efficacy and feasibility of introducing visual assessment into our practice. However, to encourage sustainability of the visual assessment, it would be important to repeat the primary intervention with members of the multidisciplinary team, including nurses and therapists. Given the regular turnover of doctors, the involvement of a multi-professional workforce will underpin longstanding incorporation of the visual assessment into 'usual' practice.

To promote more sustainable improvements, we designed and introduced an 'initial assessment' proforma, which included a section for sensory impairment. This was used for documentation of the initial consultant ward round for each patient. The proforma resulted in a marginal improvement in visual

assessment when compared with the teaching session alone, but showed additional advantages. For example, in one case, the visual assessment was revisited when it could not be performed on initial review because the patient was too drowsy. In the future, it would be useful to incorporate visual assessment into proformas used in multidisciplinary team meeting.

As a likely result of the improvement in the frequency of visual assessment of patients admitted to the ward with a fall, visual risk factors were identified as contributing factors to several falls in our QIP. Notably, the primary cause of fall for one patient was forgetting to wear their glasses, and this had been unidentified during their initial clerking in both the emergency department and acute medical unit.

To our knowledge, there are no projects in the literature which have studied the effectiveness or use the 'Look out! Bedside vision check for falls prevention'. A closed loop audit using a series of interventions (including displaying posters on the wards, checking whether bedside equipment such as Snellen charts were available and facilitating replacement if missing and a teaching presentation) delivered to the senior health team, found that these were unsuccessful in improving adherence to guidelines.<sup>13</sup> This perhaps highlights the importance of introducing a brief, user friendly and standardised tool for vision assessment, in a busy high pressure inpatient environment.

With under-corrected refractive errors, being a common correctable cause of vision impairment in older people, a basic action would be advising patients to have timely optometric tests. Furthermore, informing patients that free NHS eye tests are available at home for patients (who may be unable to leave home due to disability or illness), and helping to facilitate these as part of discharge planning arrangements, may be an effective intervention. Identifying and advising on the additional risks from the use of bifocal glasses is another simple action which can reduce the risk of falls.

The effect of novel Coronavirus pandemic (COVID-19) on ophthalmology and optometry services has been dramatic with significant delays in face-to-face assessments due to shielding amongst the elderly population and a reduction in services.<sup>14</sup> These effects will likely increase prevalence of visual impairment. For example, overdue eye tests due to isolation or reduced services may result in outdated prescriptions. Furthermore, a backlog in cataract surgery may result in increase in the maturity of cataracts. Delayed outpatient ophthalmology appointments for chronic

eye conditions such as glaucoma and macular degeneration may result in worsening visual symptoms. It is therefore more important than ever to ensure assessment of vision in older patients presenting for medical attention with falls.

#### Limitations and considerations

Our QIP identified an important area with significant need for improvement in our practice. Limitations of this QIP include the small sample size and variable duration of data collection per cycle. These limitations arose due to the changeover of doctors occurring in August and conducting the project during the COVID-19 pandemic. Furthermore, our QIP was conducted by doctors, as the primary aim of our project was to evaluate the efficacy and feasibility of introducing visual assessment into our practice. We acknowledge that involvement of a multi-professional workforce would be important for sustainable improvement; training members of the multi-disciplinary team to conduct a bedside visual assessment and incorporating this into team meetings would be an important next step.

It is also worth considering that some of the patients suffer from cognitive impairment, in some cases the assessment may not have been entirely reliable. In the future, we would like to explore how we can design visual assessment tools for patients with cognitive impairment.

#### References

1. A Global Report on Falls Prevention Epidemiology of Falls A Global Report on Falls Prevention Epidemiology of Falls Sachiyo Yoshida-Intern Ageing and Life Course Family and Community Health World Health Organization.
2. Prudham D, Evans JG. Factors Associated with Falls in the Elderly: A Community Study. *Age and Ageing* [Internet]. 1981 Jan 1;10(3):141–6. Available from: <https://doi.org/10.1093/ageing/10.3.141>
3. Downton JH, Andrews K. Prevalence, characteristics and factors associated with falls among the elderly living at home. *Aging (Milan, Italy)* [Internet]. 1991;3(3):219–28. Available from: <http://europepmc.org/abstract/MED/1764490>
4. Gill TM, Murphy TE, Gahbauer EA, Allore HG. Association of injurious falls with disability outcomes and nursing home admissions in community-living older persons. *American journal of epidemiology* [Internet]. 2013/04/01. 2013 Aug 1;178(3):418–25.



- Available from:  
<https://pubmed.ncbi.nlm.nih.gov/23548756>
5. Abrahamsen B, van Staa T, Ariely R, Olson M, Cooper C. Excess mortality following hip fracture: a systematic epidemiological review. *Osteoporosis International* [Internet]. 2009;20(10):1633–50. Available from: <https://doi.org/10.1007/s00198-009-0920-3>
  6. Falls Assessment and prevention of falls in older people NICE guidance number NICE clinical guideline 161 Developed by the Centre for Clinical Practice at NICE [Internet]. 2013. Available from: [www.nice.org.uk](http://www.nice.org.uk)
  7. Lord SR. Visual risk factors for falls in older people. In: *Age and Ageing*. 2006.
  8. Legood R, Scuffham P, Cryer C. Are we blind to injuries in the visually impaired? A review of the literature. *Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention* [Internet]. 2002 Jun;8(2):155–60. Available from: <https://pubmed.ncbi.nlm.nih.gov/12120837>
  9. Lord SR, Dayhew J, Howland A. Multifocal Glasses Impair Edge-Contrast Sensitivity and Depth Perception and Increase the Risk of Falls in Older People. Vol. 50, *CLINICAL INVESTIGATIONS JAGS*. 2002.
  10. In association with: National audit of inpatient falls Audit report 2015 [Internet]. 2015. Available from: [www.rcplondon.ac.uk](http://www.rcplondon.ac.uk)
  11. Look out! Bedside vision check for falls prevention In association with.
  12. Evans JR, Fletcher AE, Wormald RPL, Community MRCT of A and M of OP in the. Causes of visual impairment in people aged 75 years and older in Britain: an add-on study to the MRC Trial of Assessment and Management of Older People in the Community. *The British journal of ophthalmology* [Internet]. 2004 Mar;88(3):365–70. Available from: <https://pubmed.ncbi.nlm.nih.gov/14977771>
  13. Manzar H, Sheriff I, Yusuf A, Igwe C, McIntosh D, O’sullivan E, et al. Falls re-audit. *Acta Ophthalmologica*. 2017;95.
  14. Safadi K, Kruger JM, Chowders I, Solomon A, Amer R, Aweidah H, et al. Ophthalmology practice during the COVID-19 pandemic. *BMJ open ophthalmology* [Internet]. 2020 Apr 19;5(1):e000487–e000487. Available from: <https://pubmed.ncbi.nlm.nih.gov/32432169>

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Conflicts of interest:

Nothing to declare

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