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Can Dispensing Opticians and Optometrists Help Prevent Falls?
Webinar Q&A responses by David Elliott

1. Any differences between men and women or are they both affected equally with falls?
   Women have a 30% increased risk of falling (e.g., Deandrea et al., Epidemiology 2010).

2. Are sideway falls worse than forwards or backwards falls?
   Generally yes as a sideways falls increases the risk of hip fracture by 6 times and 90% of hip fractures are caused by falls (Robinovitch et al., Am Soc Bone Mineral Res 2003). Any fall downstairs is obviously dangerous as is any fall involving head trauma.

3. Does a lot of the falling depend on managing patient expectation upon collection of specs of such a change? If we tell people what to expect and to take their time this would help a bit right?
   Yes, it should. We are about to publish a paper from focus groups of older people discussing adapting to new spectacles and they all ask for more information – what should they expect? when? how quickly will they adapt? When should they return to the practice if they don't adapt? That conversation is very important, and patients are happy if they are warned of potential problems that don't occur.

4. Does hearing impairment increase likelihood of falls? As another sense is impaired?
   An excellent question, which I had to look up. It would appear that it does (systematic review and meta-analysis by Jiam et al. Laryngoscope 2016), possibly due to concurrent inner ear dysfunction and/or hearing loss adding cognitive difficulties reducing balance control.

5. Does light conditions have a bearing on fall risk factors?
   Good question and there isn't a large amount of literature on this, perhaps surprisingly. However, all 'home safety' studies, including the important low vision trial (Campbell et al. BMJ 2005) include assessment of home lighting, especially on stairs and 'night routes' (to the toilet). Light levels need to be adequate but not glary.

6. What first prompted your interest in this particular area of study and are there any tools within the home to improve the risks of falls. for example, on the stairs?
   I began working in the School of Optometry in Waterloo, Canada in 1990 and my boss had been working with a team of researchers in the Department of Kinesiology across the road and they included Prof Aftab Patla who was a world-leader in vision and gait. We worked together on a few studies, and I was hooked.

   Stair safety : provide hand rails on both sides; good lighting without glare (with switches at top and bottom of the stairs to make sure the lights are switched on!); replace old and worn our carpet and perhaps use nosings of a different colour as step edge highlighters, particularly on the top and bottom steps; see Elder.org

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7. How often, typically, does someone with visual impairment fall during a year?
There is no easy answer. Studies are limited and often just measure VA (which may have been totally different at the time of any fall: were glasses worn? Have they been updated during the study period?) and stereoacuity and contrast sensitivity may be better measures. Best to say that a third of people aged 65+ fall at least once a year and a half of people over 80. Visual impairment approximately doubles the risk of falls (e.g., Patino et al., 2010).

8. Is difference in V.A. in both eyes causing poor sterioscopic vision a large factor in falls?
There is not a large amount of research on stereoacuity as a risk factor for falls, but some studies have shown a very strong link (e.g., Ivers et al., 2000 found a 6x increased risk of hip fracture in patients without any stereoacuity).

9. Would you say that anisometropia makes even younger varifocal wearers more prone to falls?
You do need to be careful with reduced stereoacuity. For example, my wife (early 50s) used to commonly use a monovision contact lens system but found it unsafe when walking through wooded paths (typically including lots of potential trip hazards such as above-ground roots and with typically low and uneven light levels) because of the much-reduced stereoacuity (especially in low light) and so has switched to multifocal contact lenses when walking.

10. What about confusion with the elderly? Their mental health could mean they get single vision spectacles, and this be a greater risk due to them getting them mixed up. Is this something that has been incorporated into study?
Very good question! I am currently writing a grant application to look at cataract surgery (targeting low myopia to possibly provide spectacle independence) in people with early dementia.

11. Are there any statistics regarding falls when patients try walking around in SVN as they forget they no longer wear multifocals?
No, but accident studies (eg Davies et al, 2001) have shown that some fallers were wearing their reading specs at the time of their fall. However, many more missed edge of step accidents were caused by bifocal/varifocal wear.

12. Are there differences in bifocal/varifocal risk factor?
Little, if any. Most studies combine them.

13. As a DO would you recommend suggesting to an optom re reducing near add on multi focal to help prevent falls?
I think this could work really well, but would need the right patient: intelligent, high income and moderate-high risk of falls. It requires a complete change in the usual approach in that the general wear specs for most tasks are the low add multifocal. These are safe for walking and fine for spot reading. In addition, they have a pair of reading specs and/or a high add multifocal when reading newspapers, books etc.

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14. Do Bifocal wearers fall any less than Multifocal wearers?
No, not from the current evidence.

15. Experienced varifocal wearers pre cataract shouldn't go back to varifocals after both cataracts even if VAs are better?
If they are at moderate-high risk of falls, they need to consider their options and should do so prior to surgery. If a myope, they may wish to target moderate myopia (-2.00 to -3.00?) post-op and be able to read comfortably without spectacles. Hyperopes without significant astigmatism might like to target emmetropia and even just use ready readers. However, many love the convenience of varifocals and will want varifocals post-op. it may be that a low add varifocal would be safest as discussed above. We are currently looking at whether spectacles can be prescribed earlier after cataract surgery (studies suggest the majority are now stable after 1 week) and whether prescribing a varifocal between 1st and 2nd eye surgery may also help adaptation. What is clear is that no specs between surgeries and then new varifocals after 2nd eye surgery is too much adaptation and doubles falls risk (Supuk et al., 2016). At the very least, people need to be warned and to take precautions.

16. How do you convince a px that SV would be better? They always prefer progressives if they are used to them.
Distance SV is ADDITIONAL for walking outdoors for active but at risk patients. They still have their PALs. You need to inform active but at risk frail elderly people that wearing DV SV spectacles for outdoors reduces their risk of falls (and fall-related injuries) by 40% (Haran et al, BMJ 2010). Then it is up to them. The alternative is low add varifocals for outdoor use in addition to their high add varifocals.

17. I had a road traffic accident 4 years ago with some bleeding on the brain that has affected my balance with occasional falls! Any recommendations for this 66-year-old active optician (now retired hurt) I have single vision spectacles with plastic lenses and anti-scratch lenses in best form (Percival).
Stick with the SV and make sure all prescription changes are no more than 0.50D. If you are falling, I would recommend home safety modifications and perhaps exercises/tai chi/ballroom dancing to retain your balance as much as possible (try to get an appointment with your local falls team).

18. Is there a greater risk of falls with bifs vs PPLs?
No, not from the current evidence.

19. I've previously read a CET article regarding dementia and having issues with spatial awareness. in those circumstances would you recommend staying with Varis (which they might have worn for 30 years?) or switch to single vision to help reduce falls
If inactive, you must stick with varis (Haran et al, BMJ 2010). If active and getting outdoors an ADDITIONAL DV SV pair help reduce falls.

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20. What about multifocal IOLs?
This needs to be studied! Most multifocal IOLs do not work in the same way as multifocal spectacles, so do not blur the lower visual field, provide image jump and peripheral distortion, so theoretically they should be fine.

21. What if the px isn't happy with having a lower add within the varifocal due to doing a lot of close reading etc but are at high risk? Px may not be happy with a separate pair of closer working distance reading glasses?
All alternatives to (high add) varifocals in active but high risk patients are ADDITIONAL. They still retain their high add varifocals for TV, reading, in the home, driving etc. The problem is cost. Indeed, the professional bodies should be using the evidence from the (Haran et al, BMJ 2010) study to push for extra financial support in terms of 2 pairs of multifocals for patients who a GP has stated are active but high risk for falls. The extra cost of an additional pair of NHS specs is minimal compared to the cost to the NHS of a fall.

22. What was the person in the magnification blur experiments usual Rx?
Elliott & Chapman 2010: Ten participants (mean ± 1 SD; age, 77.1 ± 4.3 years; height, 161 ± 9 cm; mass, 73.5 ± 16.3 kg; distance correction sphere median, 0.00 DS; range, −2.75 to +2.25 DS; five hyperopic and five myopic participants; astigmatism median, 0.75 DC; range, 0.00 to 2.00 DC; 6/20 eyes with astigmatism above 0.75 DC; 10 well-adapted habitual spectacle wearers; three men and seven women)

23. Would you fit a bifocal/vari lower to help with steps?
No. Essilor had a lens that had a small near portion underneath which was provided an intermediate area to provide clarity for steps. I don't think they ever released it. I think the best adaptation is the low add varifocal as an additional lens for outdoors in active people who are at moderate to high risk of falls.

24. Are the Px's inactive due to fear of varifocals &/or having a fall?
They could certainly be inactive due to fear of falling, yes (Murphy et al., 2001).

25. Does having prism in a prescription put elderly patients at a higher risk of falls?
No. There is evidence that decompensated phoria can reduce balance control and that this is improved with appropriate prism. Similarly, Fresnel prisms in patients with stroke may help balance control.

26. Did the fall rate post cataract surgery decline for patients who had previously worn contact lenses?
There are no studies that have looked at this.

27. Contact lenses as a solution if capable?
Certainly, it is a very elegant solution. A contact lens correction of an ametropic eye could be very useful in a patient with anisometropia post 1st eye cataract surgery (assuming emmetropia in the operated eye) as there is no spectacle magnification.

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28. Could brightly coloured tape work on wooden steps for patient who has AMD for example?
Yes, but remember that luminance contrast works best, so make sure the tape is dark if the steps are light and vice versa.

29. Is there any data observing if patients develop an increasing use of toe clearance (higher than heel height) as AMD progresses?
No.

30. Is toe above heel step over accurate enough to be considered a prospective indicator of undiagnosed AMD
No.

31. The most common fall seems to be outside involving pavements, how can this be prevented?
Trips are caused by raised surfaces, including kerbs and pavements need to be well maintained and kerbs easy to see and also well maintained. Slips can occur due to ice or wet leaves and need to be kept clear.

32. If the step is made to look bigger, won't it cause the patient to stomp their foot down, making it unsafe?
Yes! Great point: we need it to look slightly bigger so that the foot is raised slightly but not too much.

33. What are some examples of risk factors for falls? to took out for in practice
Increasing age, female gender, gait and balance impairment, underlying systemic conditions such as arthritis, postural hypotension, stroke, diabetes and Parkinson's disease, sedative use, taking multiple medications (greater than four, polypharmacy), a history of falls and visual impairment

34. With stability, was the research conducted with people wearing footwear or barefooted? Most shoes have a heel causing a constant tip in centre of gravity.
Either barefoot or with comfortable flat soled shoes.

35. Does a sudden increase in toe clearance due to a sudden need to adapt result in increased balance issues than with a slow increase in toe clearance with a slow degeneration?
Possibly. There is no evidence either way.

36. Does post cat improved vision also improve confidence to go out, thereby increasing risk falls because of new situations encountered?
Possibly. We don't know this yet and need to study it (e.g., using GPS trackers)