ENSURING SAFETY ON THE ROAD FOR ALL

A look at some of the tools available to optometrists for facilitating patient conversations about aging and vision.

BY RANDALL FUERST, OD, FAAO

Good vision helps seniors maintain their independence and quality of life. It has even been shown to have a protective effect against dementia. Poor vision, on the other hand, is associated with cognitive decline.[1-4]

For individuals older than 65 years, there are challenges to maintaining good visual function. The development of cataracts, for example, reduces visual acuity and increases light scatter. Dark adaptation and contrast sensitivity decline, and many ocular diseases, including macular degeneration, glaucoma, and diabetic retinopathy, increase in prevalence with age. Optic nerve fiber loss, which starts at puberty but accelerates in later years, contributes to deficits in many areas of visual processing, including peripheral vision, reaction time, and depth perception. Thinning of the retinal nerve fiber layer has also been associated with worse cognitive function.[5]

These changes in visual and cognitive function can take a toll on older adults' ability to drive safely and even to ambulate safely in their homes. Every month or so, an older patient will ask me to sign a motor vehicle agency form to allow continued licensure, or a family member will seek my input in a campaign to stop his or her parent from driving. It's always a tough conversation, but it's an important one for primary care optometrists to master, given the aging of the population.

The good news is that there are a number of things we can do to maximize our patients' vision as they age and to help them and their families navigate decisions around visual function, independent living, and safe driving. In this article I offer some tips for doing just this.

AN OUNCE OF PREVENTION

Patients aged 60 years and older should have an eye exam at least annually. I do my best to maximize visual acuity for my older patients, even if they claim to be fine with VA worse than 20/20. Monitoring macular health to rule out age-related

macular degeneration is important with advancing age, so I typically add widefield OCT imaging with the Avanti (Optovue) to the annual exam for patients in this age group.

I also think that it is important to test binocular vision, as it is not uncommon in my experience for latent binocularity problems to surface as patients get older and can no longer compensate for mild deficits. I have found that such patients respond well to treatment with prism, vision therapy, and computer-guided therapy applications.

I also recommend moving older patients out of bifocal or progressive spectacles and into separate pairs of glasses for distance and reading vision. Multifocal spectacles contribute significantly to trips and falls in the elderly, who can miss details in their environment or misjudge depth when they look down through the near-vision portion of the lens.

One study found that multifocal spectacle wearers were more than twice as likely to fall as monofocal wearers and that multifocal glasses accounted for nearly 41% of the attributable risk for falls outside the home.[6] Furthermore, the Centers for Disease Control and Prevention reports that falls are a leading cause of injury and death in older Americans, leading to 7 million injuries and 27,000 deaths annually—more than from breast cancer or prostate cancer.[7] We can reduce these risks simply by getting rid of our older patients' multifocal glasses.[8]

APPRECIATE THE POWER OF CATARACT

Even in early stages, cataract can significantly affect contrast sensitivity, and this is more bothersome to some patients than others. In particular, the increase in retinal straylight from lenticular changes causes a type of glare that can have a greater effect on a patient's vision than an accompanying decline in visual acuity, especially during night driving.[9]

Of note, cataract has been shown to negatively affect driving performance and to increase vehicle crash risk,[10,11] whereas cataract surgery can have a significant positive influence. Studies have documented a 50% reduction in the rate of automobile crash involvement and in the rate of cognitive decline after cataract surgery.[12,13]

Some patients have an overblown perception of the risks of cataract surgery and prefer to delay it. I try to impress upon these patients that it is a generally safe procedure that can help to mitigate decline in age-related cognitive and visual function. Choosing an advanced IOL such as the Tecnis Symfony (Johnson & Johnson Vision) or AcrySof IQ PanOptix Trifocal (Alcon) can also help patients avoid the need for bifocals after surgery.

INTEGRATE SPECIALIZED TESTING

In addition to visual acuity and OCT, I have begun adopting specialized testing for visual and cognitive function for my older patients. Not only do such tests provide valuable objective data, but they also facilitate those tough conversations about driving cessation in a way that is factual rather than judgmental.

The RightEye System (RightEye) was cleared by the FDA in 2018 to support identification of visual tracking impairment, and in December 2019 it received the FDA's breakthrough device designation to streamline its approval for assessment of individuals with Parkinson disease.

The RightEye Functional Vision test helps me to evaluate driving ability in older patients and provides a sophisticated analysis of saccadic and pursuit eye movements, fixation stability, response time, and more. It generates an easy-to-understand report with a color-coded visual function score that I can use to educate patients and family members (see the Case Example). Healthy young adults generally score in the 65 to 85 range. Older adults may score in the 50s or even high 40s, which isn't too concerning, although these numbers are indicative of some deficits. For a patient whose scores dip into the mid or low 40s (into the orange and red zones as shown in Figure 1 in the Case Example), there would be concerns if he or she were still driving. In such a situation, I would recommend that family members take steps to make the patient's home environment safer.

Another new device, Cognivue (Cognivue), shows promise to be helpful in the diagnosis and treatment of cognitive decline. Because of the close association between vision and cognition, this FDA-cleared computerized device, which relies on neuropsychology and visual memory tests, may be another valuable addition to optometrists' offices. Not only is it a logical addition to optometric testing protocols, it can also help a practice to differentiate itself from others in the community.

AT A GLANCE

- Changes in visual and cognitive function can take a toll on older adults' ability to drive safely, and even to ambulate safely in their homes.
- Primary care optometrists play an important role in maximizing their patients' vision as they age and helping patients and their families navigate decisions around visual function, independent living, and safe driving.
- Several devices are available to test patients' cognitive health and eyesight, with other new technologies in the development pipeline.

CASE EXAMPLE

I recently saw a 70-year-old man whose adult children wanted him to stop driving. The patient insisted he could see just fine, but his family was equally adamant that it was no longer safe for him to drive.

Although he had 20/25 VA, his functional vision EyeQ score was 26, more than 30 points below normal. He was "in the red" for saccades and fixations, with scores in the 16th and 2nd percentile, respectively (Figure 1). Additionally, his eye-hand reaction time on the same test was very slow, even compared with other people in his age group (Figure 2). In particular, his visual speed was nearly one-sixth that of an average senior (572 ms vs 96 ms). This finding provided me with facts to share with the patient so that I could explain that his scores just aren't where they should be for a person to be able to drive safely.

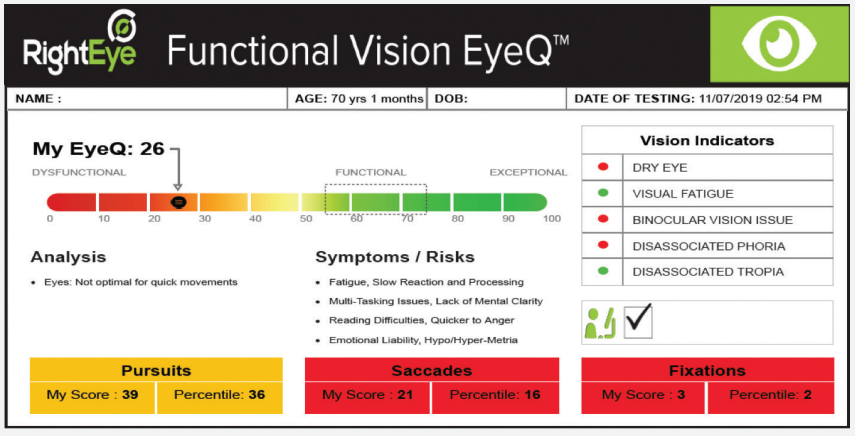

Figure 1. The patient's functional vision score was more than 30 points below normal, with poor saccades and fixations.

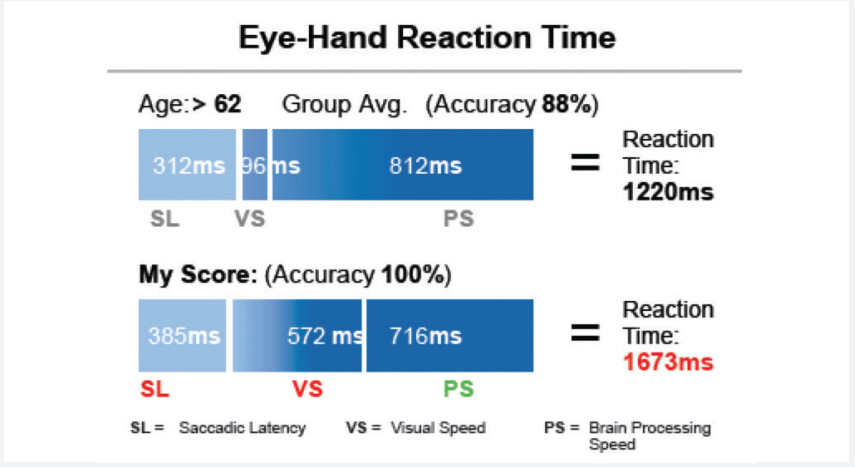

Figure 2. The patient also had slower-than-normal eye-hand reaction time, in large part due to greatly impaired visual speed.

GUIDING PATIENTS WITH GRACE

In the future, we may have more such devices to test cognitive health and eyesight. Several companies, including EyeNuk and Optina Diagnostics, are developing new retinal imaging devices that could be used noninvasively for the early diagnosis of neurodegenerative cognitive disorders such as Alzheimer disease. Researchers at Duke University have studied the use of OCT analysis for identification of retinal vasculature changes that may predict Alzheimer.[14]

Whether we prescribe different glasses, recommend cataract surgery, or use advanced new technologies to evaluate visual and cognitive function, optometrists truly stand on the front lines of helping an aging population navigate changes in their vision. ■

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