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Vision and driving: Is it time for a change in the licensing standard?

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Vision doesn't play as much of a role as you might think.

Can the new advanced optic IOLs help?

With more and more automobiles on the road, despite the high price of gasoline, has the time come for ophthalmologists to take a second look at vision and driving? What ophthalmologist has not had to perform the unpleasant task of advising a patient and his family that the patient's vision doesn't meet the standard for maintaining a driver's license? Often, older adults consider cataract surgery in order to pass their driver's test. Cataracts limit freedom of travel and mobility. People with cataracts are twice as likely to reduce both the number of days they drive per week and the number of destinations to which they travel. They are less likely to drive beyond their neighboring towns.1,2 Some give up driving. Anyone who has ever struggled through the Department of Motor Vehicle's (DMV's) eye test knows that failing means losing a driver's license and the subsequent loss of independence, and in many cases, self-esteem.

Downside of DMV test This one test can set the stage for depression, marital discord, and loss of self-worth. Decreased visual function is associated with a lower quality of life and diminished functional activities of daily living3. As physicians who care for older adults, we take seriously the dismal, though necessary, duty of having to fill out the DMV form and police the streets of compromising drivers. As an invited guest speaker at the recent meeting of the Eye and the Auto-World Congress on Vision and Driving Safety in Detroit, I was among the world's foremost experts on vision and driving, research scientists, automobile engineers, car designers, and representatives from the National Highway Traffic Safety Administration (NHTSA).

Lessons learned Here is what I learned. Simply put, the driving vision standards upon which we have come to depend have no basis in scientific fact. Is it time to do away with the visual acuity chart? According to NHTSA, in 2003, (the last year for which data is available), there were 42,643 road traffic fatalities in the United States, of which 17,013 were related to alcohol. Fifty-five percent were because the automobile left the traffic lane; 25,136 of these automobiles went off the road in the accident; 9,213 crashed at intersections; and 4,749

struck pedestrians. And in each of these cases, the driver's vision played little, if any, role. Each day more people die on our roadways than the total who have died in the wars in Afghanistan and Iraq combined. Automobile accidents are by far the most common cause of teenage death, taking more lives in one day than all that were lost at Columbine. Yet, why is there is no public outcry, no media coverage nor Congressional hearings that demand an end to the carnage? Americans have simply accepted death and driving as the risk of having an automobile. But it doesn't have to be. Contrary to what you may think, the overwhelming majority of automobile accidents occur during the day when visualization is at its best. Teenagers have the best vision and the worst driving fatality rate. Drivers over 85 years of age, whose vision may not be at its best, are at the same risk of automobile fatalities as their teenage counterparts. Vision testing was supposed to ensure that drivers could see the big green signs while traveling at speeds of 65 mph when the Eisenhower Federal Interstate System was constructed in 1959. What we know today about driving on our nation's roads does not support the notion that visual acuity is related to crash risk. Most states continue to apply an arbitrary minimal vision standard of 20/40 and require that a driver can see at least 120 degrees of visual field and can distinguish the red, green and amber colors of a stoplight.

Safety tips When it comes to driving safely, scanning the visual horizon is more important than reading letters on a sign or distinguishing red from green. Traffic lights are always in the same order from top to bottom. Fluorescent colors on hazard signs are just as bright to someone who is color blind, so why test for color vision? If you don't pass these minimal driving vision standards, should you be kept from driving? I don't think so. The scientific evidence simply isn't there to support these requirements.4 The ability to safely operate a motor vehicle has more to do with attentiveness and the cognitive ability to make proper judgments than it has to do with vision. Driving distractions such as searching for a song on the radio or dialing a cell phone while driving can be potentially catastrophic.

Study results A recent study published in the British Medical Journal revealed what most of us have long suspected, namely, talking on a cell phone increases the risk of an accident four-fold.5 It doesn't matter if you are holding the phone or talking hands-free; it is the loss of attentiveness that causes accidents. Alcohol and driving is a dangerous combination. If a driver is drunk, his thinking is impaired, there is a lack of attention to the demands of the roadway and increased crash risk, often taking an innocent driver and passengers along in the process. The visual field lets a driver know what is coming at them from another lane. Impaired visual fields do not necessarily limit a person's ability to drive, though. In many states, bioptic telescopes are permitted under certain circumstances to allow those with a limited visual acuity of 20/200 or a loss of visual field to drive. The studies show that they are safe doing it. People with glaucoma, are at no more at risk of an accident than you or me. Only after loss of more than 80% of the visual field, does it impact driving ability.

Measuring accuracy A more accurate measure of a driver's ability to react to

the demands of driving is known as “the useful field of view” (UFOV) test. This test of reaction time and attention measures a driver’s response to the many things that come into view while driving. A low score in the UFOV is a better predictor of future crash involvement. Why is this test not included in any licensure requirements? Baby Boomers, all 79 million of us, are rapidly reaching retirement age, and we are the fastest growing group of drivers. Older drivers are more likely to suffer from eye diseases, such as cataracts, macular degeneration, glaucoma, and diabetic eye disease that affect their visual acuity and ability to see under different lighting conditions, which is known as functional vision. Cataracts limit freedom of travel and mobility. People with cataracts are twice as likely to reduce both the number of days they drive per week and the number of destinations to which they travel. They are two times less likely to drive beyond their neighboring towns than people without cataracts.6 Surveys of older adults show that of all the diseases, our senior citizens fear loss of vision the most. An AC Nielsen survey conducted in November 2004, queried adults in the United States aged 55 to 75 years of age with a valid driver’s license that drive at night at least once every few months and who never had cataract surgery. The study asked participants about their concerns about vision loss because of cataracts and preferences for treatment. Of those questioned, 88% to 91% said that they were “extremely” or “very” concerned about not being able to drive, especially at night. They also said that it is extremely or very important to have a lens implant that provides a quality of vision that improves reaction time, stopping time and stopping distance when driving. They ranked it more important to have a lens implant that makes driving safer (especially at night), restores the eye’s function to that of a healthy young adult (not a healthy older adult), and that the IOL improves the ability to see in both bright light and low light situations.

Concerns Study participants are right to be concerned about cataracts and the visual quality after surgery. Each year ophthalmologists perform over 2.6 million cataract and lens implant procedures in the United States and over 14.2 million worldwide. A study published in Journal of the American Medical Association (JAMA) in 2003 reported that those with cataracts are 2.5 times more likely to be involved in a crash than those with healthy eyes. This same group experienced a four-fold reduction in crash risk following cataract surgery.6 Ophthalmic surgeons do a terrific job of improving visual acuity with lens implant surgery. Politicians should note, with over 80% of the health-care dollars being spent in the last six months of life, the early availability of surgical intervention for our senior citizens translates into significant savings for society. And as we know all too well, seniors vote. Fortunately, studies also show what older Americans already know. Namely, those ages 60 to 85 self-regulate their driving behaviors to reduce crash risk by limiting night driving, avoiding unfamiliar roads, and reducing total mileage traveled. It is not age, visual acuity, visual field, or color vision that impacts on the numbers of fatal accidents. It is the desire to pay attention to the road in order to drive safely, and our oldest citizens aren’t in any hurry to leave this world sooner than they need to. I am not foolishly advocating that we abandon vision testing for all drivers; however, I am suggesting only that we rethink the arbitrary cutoff of 20/40. The benefits of mandatory vision tests,

road tests, age restriction, more frequent license renewal, and adopting more stringent licensure policies to avert highway fatalities is simply not supported by the prevailing research. What does work? A study published in JAMA reports that states that have adopted in-person license renewal for drivers over age 80 did experience a significant lowering of fatality rates on the highways.4 Maybe we should just make older drivers come in to pick up their driver's licenses. Enforcing existing laws on drinking and driving could cut the rate of highway fatalities in half. Mandatory blood alcohol monitoring devices linked to automobile ignition systems can keep at-risk drivers off the road. States and the federal government can improve highway signage, road lighting, and eliminate road hazards. Automobile manufacturers need to shift their focus from the last 40 years of crash survivability to preventing accidents from occurring. The newest automotive telemetric technologies, much of which is already available in recent models include ABS braking systems, and more could make a real difference in reducing fatalities. Ophthalmologists who care about our eldest citizens should collectively strengthen efforts to improve driving safety and reduce America's shameful crash rate. More legislation along with more federal and state regulations is not the answer. We need to test for what is known to impact driving safety. It is time to fix our existing licensure system to make it reflect evidenced-based scientific fact rather than science fiction.

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