

Driving Competence: It's Not a Matter of Age

The recent tragedy in Santa Monica, California has once again sparked questions in the media such as, "How old is too old to drive?" Heightened awareness, due to mounting concern for the safety of pedestrians and other road users, has resulted in a public discussion of age as a risk factor for unsafe driving. This concern is not new, and three papers in the current issue of the *Journal of the American Geriatrics Society (JAGS)* touch on issues relevant to this discussion.

IS AGE A RISK FACTOR?

Functional impairments that affect driving skills are more prevalent in older adults. This increased likelihood of functional impairment frequently raises the question of whether age itself should trigger increased scrutiny of driving skills. The paper by Duchek et al.¹ provides longitudinal evidence for declining driving skills over time for older adults in general and for older adults in the early stages of dementia of the Alzheimer type (DAT) in particular. Nevertheless, the majority of older drivers, using any age cutoff, are safe drivers. In the absence of disease or functional impairment, there is no empirical evidence that the subtle age-related changes in visual sensory or cognitive skills detected in a controlled laboratory study or in a clinic affect the ability of older persons to operate a motor vehicle safely. The impairments that do affect driving ability do so for individuals of all age groups, not just the older driver. In addition, these impairments can be measured and detected on an individual basis; their presence does not need to be inferred based on inappropriate stereotypes. In many instances, identifiable impairments may be remediable, thus making their identification beneficial from the standpoints of personal mobility and public safety, not to mention benefits to overall health and functioning.

WHAT DO WE KNOW ABOUT RISK FACTORS?

Many potential risk factors have been evaluated relative to driver safety. These include age, impaired visual abilities, reduced visual information processing speed and other cognitive abilities, physical impairments, medical conditions, and medications. With respect to visual abilities,² visual acuity is only weakly related to crash involvement if at all, although it is important for reading distant road signs. Peripheral vision appears to play a critical role in that severe visual field loss in both eyes doubles crash risk³ and causes driving performance problems.⁴ Severe contrast sensitivity impairment from cataract substantially elevates crash risk, even if present in only one eye.⁵ Therefore, the

common practice of using the better eye as an approximation of a person's vision may overestimate his or her visual functional ability in everyday activities and underestimate the risk of potentially injury-producing events. With respect to visual information processing, an increasing body of literature from laboratory and field studies in a variety of countries and differing driving environments has shown that the greater the impairment in a specific measure of the Useful Field of View (UFOV[®]), the greater the risk of impaired driving performance or crash,⁶⁻¹⁰ and in particular injurious crash.¹¹ In general, when the population of older drivers is considered as a whole, measures of information processing and other cognitive abilities have been found to be more highly predictive of driving competence than age-related sensory decline. Thus, the question of whether early stages of dementia should trigger driving restriction has been the subject of debate over the past decade. At this time, the issue is settled. The evidence overwhelmingly supports the conclusion reached in this issue by Duchek et al.,¹ namely, that early stages of dementia should definitely trigger driver evaluation as well as more frequent reevaluation, preferably by a certified driving rehabilitation specialist or occupational therapist with special training in driving evaluation. Less evidence is available on the role of physical and motor abilities and crash risk. Further research is needed on the minimum levels of physical functioning necessary to operate a motor vehicle safely. Although medical conditions are not always good predictors of driving performance per se, certain diagnoses, along with the prescription of certain medications, should serve as triggers for a more comprehensive evaluation of driving ability.

We know that the presence of impairments may lead to self-imposed modifications in driving habits. Are these modifications effective? In this issue, West et al.¹² evaluate the self-report of driver restriction of 629 current drivers relative to the drivers' performance on a comprehensive battery of vision tests. West et al. found that only vision-related driving self-restriction, such as avoiding driving at night, was significantly associated with reduced performance on the battery and that older adults with even early changes in spatial vision and depth perception appear to recognize their limitations and restrict their driving. However, poor visual attention, known to be a stronger predictor of crash risk, did not necessarily precipitate driving restriction. Although self-restriction definitely occurs in older drivers, impaired drivers still have more crashes, despite their reduced exposure.¹³ Educational programs promoting safe driving strategies for seniors are

a popular approach for addressing this problem, but their safety benefit has yet to be demonstrated. The objective of a recent randomized study was to determine whether an individualized educational program promoting strategies to enhance driver safety reduces the crash rate of high-risk, visually impaired older drivers.¹⁴ Like two earlier studies evaluating the safety effect of older driver education,^{15,16} the educational program did not enhance driver safety, although it was associated with increased self-regulation and avoidance of challenging driving situations and decreased driving exposure by self-report.

ARE THERE ANY MORE EFFECTIVE INTERVENTIONS TO HELP MAINTAIN DRIVING COMPETENCE?

Owsley et al.¹⁷ found that adults with cataracts were half as likely to be involved in motor vehicle crashes if they underwent cataract surgery. Cataract is the leading cause of vision impairment in older adults in the United States, with about half of those aged 75 and older with clinically significant cataract.¹⁸ Therefore, one potential way to minimize crash risk in a substantial number of older drivers is to assure that the option of cataract surgery is seriously considered for those who have cataract and want to maintain an active driving lifestyle. More generally, a reasonable strategy may be to focus on the aggressive treatment of all chronic medical conditions to reverse or slow functional decline in older adults. This approach not only improves public health in general, but also enhances public safety in a society in which the older driver population is growing.

With respect to cognitive impairment, there has been a great amount of interest in the potential role that cognitive training could have in improving the performance of everyday activities such as driving and enhancing quality of life. Cognitive training protocols have been designed for improving processing speed, memory, and problem solving skills, and recent research has shown that improvements are indeed possible.¹⁹ In addition, improved driving abilities, both on the road and with driving simulation, have been shown from speed of processing training.²⁰

Physicians and other healthcare providers are in an ideal position to identify potentially high-risk older drivers, because during a clinic visit they make medical diagnoses and have the capacity to identify functional problems. Therefore, the development of appropriate screening information and tests for their use is vital. The Byszewski et al. paper in the present issue points out the need to educate physicians about early warning signs for driving problems among the elderly and describes one attempt to do so. In this study, Byszewski et al.²¹ introduced an informational toolkit to physicians and found that, after review of the toolkit, physicians indicated that they were more likely to query older adults and family members about driving abilities. Nevertheless, with respect to assessment, a number of conclusions can be drawn from the literature. For the majority of older drivers with no history of driving problems, a brief screening of cognitive and physical function, such as that currently under evaluation in Maryland,²² should be adequate to quickly identify low-risk drivers. For those drivers who do not immediately

qualify as low risk, a more extensive evaluation should be conducted. This evaluation should consist of a more in-depth assessment of visual function, including contrast sensitivity, and assessments of cognitive function and visual information processing, such as UFOV[®], and of mental and physical status. Using these components, it would then be possible to substantiate the likelihood that the driver is at low risk for crash or to provide appropriate referral for visual intervention, cognitive intervention, adaptive equipment, or counseling about transportation alternatives.

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