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# The DriveABLE Assessment: A Review

Assessing an older driver's ability to safely navigate the roads is a challenge faced increasingly by healthcare professionals. This article discusses this problematic issue and offers an evaluation of an available tool, DriveABLE™, to accomplish this difficult task.

by Peter N. McCracken, MD, FRCPC

Although, by now, the problematic issue of driving with cognitive impairment has become better known by many healthcare professionals, confronting this clinical dilemma continues to be a source of considerable uneasiness for many clinicians. This subject has been reviewed in considerable detail in a previous issue of this journal.<sup>1</sup> The current article critiques the most available tool used to evaluate seniors whose driving has become worrisome: DriveABLE.

On a per person basis, older drivers have relatively few crashes.<sup>2</sup> However, when the amount of driving is taken into account, the crash risk of drivers over the age of 75 years rivals that of the high-risk 16-to 24-year-old drivers.<sup>2,3,4</sup> Older-driver crashes are not strictly “fender benders” of little consequence. Automobile crashes are the second leading cause of injury-related deaths.<sup>5</sup> The consequences of injuries to seniors are also of concern, because seniors recover more slowly and less completely than do younger

people. Moreover, the crashes of drivers over the age of 65 years tend to be multiple-vehicle crashes.<sup>6,7</sup> Thus, older drivers who are at risk for a crash endanger not only themselves but others as well. Much of the personal tragedy and public cost of these crashes could be avoided if procedures were developed that could identify problem older drivers before they had a crash.<sup>8</sup>

First, it is sensible to review briefly the critical clinical issues in the seniors' abilities in this complex domain. There are numerous, well-described, age-related changes in physical and mental abilities that are relevant to driving. However, most experts agree it is unlikely that the changes associated with normal aging account for older-driver crashes. It is much more likely that age-associated medical conditions and their medication treatments result in impaired driving competence. In 1996, the Ontario Ministry of Transportation indicated that one of the two best predictors of an older driver having had a crash during the previous five years was the presence of at least one medical condition. However, such medical conditions

usually do not prevent a senior from obtaining a license to drive. As in previous descriptions, these conditions are listed in Table 1.

Almost all physicians understand the necessity to intervene once driving impairment in a patient is recognized. Simultaneously, we all are aware that a diagnosis of dementia does not mandate immediate driving cessation. This paradoxical state of affairs places considerable pressure on family physicians to monitor and evaluate driving competence with few hard rules to go on. Up until recently, there was no consensus on a gold standard to use in evaluating driving competence in the case of dementia or other causes of cognitive impairment. A commonly utilized tool is the Folstein Mini-Mental Status Examination (MMSE). This is disconcerting, given the evidence from retrospective studies showing that the MMSE is of very limited usefulness for the achievement of this goal.<sup>9</sup>

Akin to many of medicine's quandaries, the responsibility of decision-making in the questionable senior driver has fallen into the hands of family physicians.<sup>10</sup> Their

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role, in terms of promoting autonomy and independence versus the consideration for public safety is indeed perplexing.<sup>11</sup> Many such physicians have had no real opportunity to explore this issue during their residency. The lack of uniformity of laws to report unsafe drivers across different provinces further muddies the waters. Misperceptions in the risks of litigation add to the concern.

### The DriveABLE Assessment

This tool is a two-part assessment (in-office testing and on-road evaluation) developed to provide a science-based determination of the driving competence of persons with cognitive impairments. The driving errors that are scored have been documented to be associated with competence. A key point is that errors not associated with competence are not scored to protect healthy competent drivers. This advancement plus the performance criterion of “out of the range of normal” make DriveABLE the only testing procedure consistent with the Supreme Court ruling for non-discriminatory testing of medically disabled drivers.

Unique to the development of the DriveABLE evaluation was the massive effort to identify the various types of driver errors made in young control drivers, old control drivers and those with cognitive impairment (see Table 2).

Eventually, these errors were categorized as non-discriminating, discriminating and criterion errors (the latter are particularly severe, such as going through a red light or stop sign, or stopping at a green light).

Table 1

### Illnesses and Medications Impairing Safe Operation of a Vehicle

- Cardiovascular disease (e.g., cardiac arrhythmia, congestive heart failure, valvular heart disease)
- Cerebrovascular disease (e.g., stroke)
- Neurologic (e.g., head injury, Parkinson’s, multiple sclerosis, tumor, narcolepsy, sleep apnea)
- Respiratory diseases (e.g., chronic obstructive pulmonary disease, respiratory failure)
- Metabolic diseases (e.g., hypothyroidism, diabetes)
- Renal disease (chronic renal failure)
- Vascular Dementia (e.g., Alzheimer’s disease, multi-infarct dementia, Lewy Body, frontal temporal, Pick’s, Huntington’s, alcoholic, poisonings)
- Psychiatric illnesses (e.g., schizophrenia)
- Medications (e.g., particularly those with central nervous system effects)

This enabled DriveABLE to rate a driver’s competence according to the mistakes (s)he made on the road test. The in-office testing enables decisions about the most competent and most impaired drivers without the need for in-car testing on public roadways. Drivers who fall “indeterminate” proceed to the road test to resolve competency. The latest field testing indicates highly accurate decisions about the driving competence based on the in-office testing only for just over half of the clients,

### Enhancements

The original research and validation of the DriveABLE protocol was for drivers with generalized cognitive impairment of diverse etiologies, but without consideration of the patient’s typical driving environment. When concern was expressed about the possible inequality for rural drivers, a research project was initiated carefully matching (age, sex, diagnosis, cognitive status) sets of urban and rural drivers who completed

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with those with intermediate results needing in-car testing. This reduces the number who do require actual road testing. DriveABLE evaluations are accepted by licensing authorities in all provinces having a DriveABLE assessment centre.

the DriveABLE assessment.<sup>12</sup> Findings show no difference in the pass/fail rates of the matched urban and rural drivers, making DriveABLE a sound evaluation.

With the focus changing to having healthcare professionals admin-

Table 2

**Categories and Examples of Driver Errors Identified by DriveABLE**

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| <ul style="list-style-type: none"> <li>• Hazardous Error: Evaluator took control or traffic adjusted</li> <li>• Extreme Positioning Error: driving on the shoulder</li> <li>• Minor Positioning Error: driving too close to lane markings</li> </ul> | <ul style="list-style-type: none"> <li>• Turning Position Error: Wide turns or cut turns</li> <li>• Stop Positioning Error: stopping too close or too far back</li> <li>• Scanning Error: no shoulder checks</li> <li>• Overcautiousness: driving too slowly</li> </ul> |
|--|---|

ister and oversee the assessment, the process was divided into two components allowing the health-care facility to administer the in-office computerized component and having the on-road assessment administered by a licensed on-road evaluator specifically trained by DriveABLE. By specifically dividing the responsibility for the administration of each component, hospitals, in particular, have found it much easier from a risk management standpoint to implement the program. The evaluation is now economically and administratively feasible for both large and small

researchers of the University of Alberta, with funding from the Pallium Project (Primary Health Care Transition Fund) have developed CME course material (Main Pro-C) on the public health issue, the driving assessment protocol, legal (risk management) concerns and the consequences of a necessary “no driving” outcome. A communication module (complete with video) is a critical component of the courseware, as is a video of interview with families who participated in this project.

Numerous myths exist about seniors’ driving. One by one, they

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hospitals, with one road test evaluator often serving several hospital-based centres. Although the structure of service delivery has changed, the overall scientific base, scoring, and quality assurance for the assessment remains unchanged.

**Reaching Out**

There is a critical need for professional education on the medically at-risk driver. To help fill this void,

gradually have been identified and targeted for education.<sup>13</sup> An articulate handbook has been developed mainly for physicians, to fill them in on these misperceptions. Such myths are outlined in Table 3.

A new approach has arisen from the University of Alberta to help those drivers who have lost their driving licenses due to illnesses such as dementia. Extrapolating from the available data, loss of

driving privileges due to dementing illness will affect more than 132,800 Canadians who are 65 years and older, with over 89,000 of these having Alzheimer’s disease.<sup>14,15</sup> The number will increase dramatically in the next five decades due to society’s rapidly changing demographics and the increased proportion of female drivers in the baby boomer cohort. Up until now, few, if any, programs have been available designed directly to assist individuals and their caregivers in coping with this very negative event. The anger and isolation of patients experienced by these individuals, however, is well known to practicing physicians. Many consider such issues tougher to accept than the diagnosis of dementia. The new approach involved the use of psychoeducational group interventions for individuals with dementia and for their caregivers.

The results from a two-year Canadian study<sup>16</sup> assessing the group revealed improvements in depression (as measured by the Geriatric Depression Scale (GDS) and Modified GDS), decreases in behavioural disturbances, increases in pleasant events rating as well as increases in quality of life ratings. Similarly, caregiver results, compared to controls, showed decreased depression, increases on coping self-efficacy, and increases in coping training scores. The positive results of this intervention underscore the need to take research to practice. Under evaluation now is the implementation of these support groups in the community.<sup>16</sup>

Hogan<sup>17</sup> has articulated a very useful commentary on competence in older drivers. He notes that a hierarchy of skills are required for safe driving.<sup>18</sup> These include operational (basic motor, sensory or perceptual, and cognitive capabilities to control a vehicle), tactical (choice of speed and distance kept from the car in front) and strategic (planning or preparing for trips). He found that evidence supporting office-based assessments was weak (level III), recommending validation of such approach. He also noted that the “red flags for medically impaired drivers” were over inclusive. Furthermore, he stated that the CMA guide was too broad to be of general use.

The University of Ottawa division of Geriatric Medicine has made important contributions on the Canadian front. Aimed at the education of family physicians, they have developed a Driving and Dementia Tool Kit, with the positive result of significant expertise, knowledge and confidence in handling impaired patients that continue to drive.<sup>19</sup> However, as noted by Molnar et al the tool kit has not been validated.<sup>20</sup> In March 2002, the CIHR’s Institute of Aging awarded a \$1.25 million New Emerging Team grant to their CanDRIVE research group, a collaborative group of Canadian researchers dedicated to improving the safety of older drivers.

## Discussion

As the DriveABLE program by now has been in operation for

Table 3

### Common Myths About Senior Driving

- Senior driving safety is not a problem.
- For senior drivers, driving in rural areas is safer than in urban areas.
- The increased crash rates per miles driven are the result of changes associated with aging.
- Driving issues are not a physician’s responsibility.
- Seniors know when to stop driving and should decide on the time for this to cease.
- The self-restrictive habits of senior drivers (e.g., not at night or during rush hour) are enough to keep them safe.
- My patient is safe to drive because (s)he drives only in familiar places.
- A driver refresher course or driver testing will overcome a patient’s decline in driving ability.
- Having a co-pilot in the car is an acceptable method for maintaining the driving of a cognitively impaired senior.
- The standard road test is adequate to evaluate a senior’s fitness-to-drive.
- A restricted license is all that is needed for safety enhancement.
- A diagnosis of Alzheimer’s disease always means that the patient is incapable of driving safely.
- Spouses or family members are good judges of the patient’s driving abilities.
- If I raise the driving issue, I will lose my patient.
- The standard medical examination and/or the MMSE are effective tools for assessing a patient’s fitness-to-drive.
- Physicians who do not report medically-at-risk drivers cannot be held liable.

eight years, it is feasible to offer an evaluation of it, based on the opinions of physicians who commonly refer patients to it.

The strength of DriveABLE is its evidence-based algorithmic development. Although the different steps did require years of collaborative research (Alberta Heritage Foundation for Medical Research Fund) with other health professionals, it would have been desirable for the earlier basic data to have been presented in peer-review journals. Later iterations did appear in such journals,<sup>21,22</sup> with detailed documents available.<sup>12</sup> In the past, healthcare professionals have utilized visual-spatial evaluations (Trails A and B,

intersecting pentagons, clock drawing, cube drawing) as tools to evaluate driving. These steps can assist in the decision making, but there is a paucity of evidence available on how well they correlate to on-road driving competence or when evidence is available, it indicates that the relationship is poor. Their direct comparison to on-road driving performance has been lacking. With a DriveABLE assessment, because road testing follows for all those patients whose scores on the in-office evaluations are indeterminant, this shortfall cannot apply here. DriveABLE does relieve the family physician or specialist from the pressure of making these decisions on their

own. Thus, it does serve as an arbitrator to assist in the decision-making process. Nonetheless, the decision as to how to proceed is left with the clinicians with the final decision made by the provincial licensing authority.

The main weakness of DriveABLE is the cost to the patient. Thus, a patient who has been identified as needing an assessment must pay for that assessment, with the very real possibility that he or she may lose their driving privileges. Some geriatricians have found that some patients will simply agree to cease driving, rather than pay the amount. The individuals at DriveABLE are well aware of this reality and have appealed repeatedly to provincial governments to cover the costs of

the test, but to no avail. Another shortfall is the intimidating spectacle of a senior taking the initial part of the evaluation with a computer. What is required, however, does NOT require computer literacy or familiarity. The anger and hostility experienced by patients and caregivers (see above) are another drawback. However, it is difficult to imagine any such evaluation that would leave those who fail it blissfully disposed. By definition, this type of assessment has to be suitably arduous because of what is at stake.

Finally, it should be mentioned that in the spring of 2004, the CIHR Institute on Aging provided funding for a Canadian Consensus Meeting on Driving Evaluation in Older Drivers to focus on older

driver assessment. Overall the group made a series of recommendations of the pre-road component, including the areas to be assessed. The group was unable to make a recommendation on the DriveABLE competence screen based on a number of factors including the lack of familiarity of many of the participants with the assessment and its administration. There was moderate consensus on this. The road test requirements of that consensus appeared compatible with what DriveABLE assessments offered.<sup>23</sup>

The prevailing sentiment among healthcare workers is that our professional roles are indeed facilitated by the DriveABLE Assessment. New refinements in this problematic area are expected to continue.

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