Driving and cognitive decline

A need for collaboration

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As a family physician, I often encounter patients with mild cognitive decline in my practice. The prevalence of dementia in those older than 65 years of age is 8%, meaning that an average family physician's practice has approximately 30 to 40 elderly patients with dementia.[1] As a primary care physician, it is often challenging to diagnose these patients in the early stages, as well as to ensure that the multitude of issues for both the patient and the family are addressed. A patient with a new diagnosis of mild cognitive impairment (MCI) prompted me to review the issues of cognitive decline and driving status.

The patient

An active 69-year-old retired professor was diagnosed with MCI by a cognitive neurologist in the summer of 2009. He was told by the neurologist that his symptoms might also be consistent with early Alzheimer dementia and that he would be seeing him every 4 to 6 months for review. His neurologist appropriately discussed the issue of his driving, and, after inquiring with the family, believed that he was safe to drive. His family had no concerns about the questions from the *Driving and Dementia Toolkit*.[2] His Mini-Mental State Examination (MMSE) score had been 27 out of 30, and there had been absolutely no indication of unsafe driving behaviour, accidents, near-misses, traffic tickets, etc. In fact, the patient's son-in-law was also a neurologist and had commented that he had no concerns about his father-in-law's current driving ability.

After the diagnosis, the patient's family members contacted the Alzheimer Society's First Link program; they were informed that it would be helpful for him have a local geriatrician, as his neurologist—a cognitive specialist—was some distance away. The patient was referred and saw the geriatrician 2 months later. As part of the assessment, the geriatrician performed the Montreal Cognitive Assessment (MoCA).[3] The patient scored 23 out of 30 on the MoCA, and at the end of the 40-minute visit was diagnosed as having sufficient cognitive impairment to be incompetent to operate a motor vehicle. Interestingly, the patient's wife, who also attended the appointment, was surprised not to have been asked about her and her family's concerns about her husband's driving. His wife drove him home from the appointment. The geriatrician had informed him to stop driving immediately and had submitted a Medical Condition Report to the Ministry of Transportation. Unfortunately, the patient was not given the option of not driving until successful completion of a road test, and his licence was suspended.*

The tests

The MoCA is one of several tests used by family physicians, neurologists, and gerontologists for assessing patients' mental acuity. The MoCA consists of a series of questions designed to yield a score based on various competencies—visuospatial, executive, naming, memory, attention, language, abstraction, delayed recall, and orientation. A guide on how to administer the test, the correct answers, and the way to score the responses of each patient is provided. Using a cutoff score of less than 26 provides sensitivity of 80% and specificity of 91% to distinguish MCI from normal cognitive function.

Study of the MMSE shows it is poor at the upper end (particularly with an educated client) in discriminating between normal cognitive function and MCI.[4] The MoCA provides higher sensitivity and specificity to distinguish between MCI and normal function. The MoCA's memory testing involves more words, fewer learning trials, and a longer delay before recall (5 min for MoCA vs greater than 10 sec for MMSE). Executive functions (eg, placing numbers on a clock), higher-level language abilities, and complex visuospatial processing can also be mildly impaired in MCI patients and are assessed by the MoCA with more numerous and demanding tasks than the MMSE (eg, drawing a cube and a clock in MoCA vs intersecting pentagons in MMSE). Furthermore, the MoCA tests executive functioning and abstract thought (eg, similarity between watch and ruler), while the MMSE does not test these 2 areas at all.

The review

After coming to terms with the suspension of his licence, the patient performed a literature search on the Internet, found the MoCA test, and reviewed his errors. He had

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*The patient is the author's father, who has since had his licence reinstated. He completed and passed the DriveABLE test and his cognitive neurologist submitted supplementary reports that were sent to the Ministry of Transportation. Unfortunately, the geriatrician's report to the Ministry of Transportation resulted in suspension of the patient's licence for 3 months. The loss of driving privilege was frustrating for him, as it was seemingly based solely on a MoCA score. Because there was no information from his family members or other physicians that corroborated his driving, his impression was that the situation could certainly have been avoided by better communication.

lost 4 points on memory questions and was down to 26 out of 30. He had also lost marks for the abstraction question. This bothered him. As a linguist, the professor was interested in the way the question was worded. The question about a banana and orange (ie, fruit) was understood. However, he had difficulty when asked for the "similarity" or "likeness" between the bicycle and train, as well as the ruler and the watch. He pondered further and realized his difficulty in understanding what was being asked in the question was because of the wording that was used. The abstraction question was asking the patient for a function (which was the similarity intended) and not about features or appearance (equally appropriate interpretations).

The professor was bothered by his mistake and asked me about the wording of the test. We had a discussion about it and he explained to me that if he had been asked about a *resemblance* instead of a *similarity,* he would have answered correctly and would have scored a 25 out of 30—only a point below the cutoff for normal.

The challenge

As physicians, we must remain extremely vigilant when it comes to medical conditions and driving. The reports we make can be distressing to patients.[5] The general principles outlined by the *Driving and Dementia Toolkit* state the following:

> The diagnosis of dementia does not automatically mean no driving ... it does mean that you must ask whether the person is still driving and assess and document following provincial reporting requirements.[6]

Research on predictors of driving cessation in mild to moderate dementia suggests that behavioral disturbances such as apathy and hallucinations were strong predictors of driving cessation.[7]

In April 2010, the American Academy of Neurology issued an updated guideline to help physicians decide when patients with Alzheimer disease or another type of dementia need to stop driving. The new guidelines are less stringent than previous recommendations, published a decade ago, which tended to encourage patients to cease driving. The guideline recommends use of the Clinical Dementia Rating scale instead of the MMSE. During his presentation of the new guidelines, Iverson said:

> It's important for doctors to discuss this [driving] with patients and caregivers soon after the diagnosis since

restricted driving will affect the patient's quality of life and may lead to other health concerns such as depression .... Doctors should be aware that assessing driving ability is a complex process. More than one source of information is needed to make a judgment.[8]

The guideline also presents evidence that shows while patients with mild dementia, as a group, are higher-risk drivers, more recent studies report that as many as 76% are still able to pass an on-road driving test and can safely drive. These guidelines suggest that patients with mild dementia who continue to drive should be reassessed at 6-month intervals. Additional medical conditions—especially visual defects or mobility impairments—might also be problematic.[8]

As physicians we have an important responsibility to our patients and the safety of others. The issue of driving often greatly affects the relationship we have with our patients and their families. We are challenged with the difficult decision of deciding which patients to recommend for road tests and who needs to be reported to the Ministry of Transportation. In early dementia, this task becomes even more challenging and is one that ideally involves a collaborative approach from all physicians involved in patients' care.

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References
1. Canadian study of health and aging: study methods and prevalence of dementia. *CMAJ* 1995;150(6):899-913.
2. Canadian Medical Association. *Determining medical fitness to operate a motor vehicle. CMA driver's guide.* 7th ed. Ottawa, ON: Canadian Medical Association; 2006. p. 115-8. Available from: **www.cma.ca/index.php/ci_id/18223/la_id/1.htm.** Accessed 2010 Sep 22.
3. The Montreal Cognitive Assessment (MoCA) [website]. *Montreal Cognitive Assessment (MoCA). Administration and scoring instructions.* Montreal, QC: The Montreal Cognitive Assessment; 2010. Available from: **www.mocatest.org/pdf_files/MoCA-Instructions-English.pdf.** Accessed 2010 Sep 22.
4. Regional Geriatrics Programs of Ontario [website]. *Dementia screening and assessment.* Toronto, ON: Geriatrics Interprofessional Interorganizational Collaboration; 2010. Available from: **http://rgps.on.ca/giic/GiiC/pdfs/1b%20Dementia%20screening%20overview.pdf.** Accessed 2010 Sep 23.
5. Kingston, Frontenac, Lennox and Addington Dementia Network. *Reporting drivers with dementia: a guide for physicians* [pamphlet]. Kingston, ON: Kingston, Frontenac, Lennox and Addington Dementia Network. Available from: **www.providencecare.ca/objects/rte/File/Health_Professionals/drivinganddementia_physician.pdf.** Accessed 2010 Sep 23.
6. Champlain Dementia Network, Regional Geriatric Program of Eastern Ontario. *The driving and dementia toolkit.* 3rd ed. Ottawa, ON: Regional Geriatric Program of Eastern Ontario; 2009. Available from: **www.champlaindementianetwork.org/uploads/Resources/kitjune09.pdf.** Accessed 2010 Oct 14.
7. Herrmann N, Rapoport MJ, Sambrook R, Hébert R, McCracken P, Robillard A. Predictors of driving cessation in mild-to-moderate dementia. *CMAJ* 2006;175(6):591-5.
8. Iverson DJ. *Practice parameter update: evaluation and management of driving risk in dementia: report of the Quality Standards Subcommittee of the American Academy of Neurology.* Paper presented at: American Academy of Neurology Annual Meeting Press Conference; April 12, 2010; Toronto, ON.