

Approach to assessing fitness to drive in patients with cardiac and cognitive conditions

Frank J. Molnar MSc MDCM Christopher S. Simpson MD

Physicians are often uncomfortable assessing fitness to drive; many have never been taught how to perform such an assessment. The physical examination was developed to detect the presence and severity of disease, not to assess functional skills, such as ability to drive. Telling patients that they are no longer fit to drive can be traumatic for patients, their families, and health care providers.¹ Furthermore, there is evidence that mandatory reporting of unfit drivers to regulatory bodies might adversely affect patient-physician relationships, potentially leading to un-intended and unforeseen suboptimal outcomes.²⁻⁹

On the other side of the coin, reporting unsafe drivers is legally mandated in most Canadian jurisdictions,¹⁰ and even where it is not, physicians can still be found liable if they fail to report a patient who is later determined to have caused harm to others as a result of medical impairment behind the wheel. Accurate assessment of fitness to drive, however, allows physicians to help patients avoid disabling injuries or death and to help patients and their families avoid the grief and legal repercussions associated with contributing to the injuries or deaths of other road users or bystanders.

To better prepare physicians to meet this important societal role, we present our clinical approach to assessing fitness to drive in the context of a fictitious case, which contains several common elements that might be encountered in everyday practice.

This article has been peer reviewed.

Cet article a fait l'objet d'une révision par des pairs.

Can Fam Physician 2010;56:1123-9

Abstract

OBJECTIVE To help physicians become more comfortable assessing the fitness to drive of patients with complex cardiac and cognitive conditions.

QUALITY OF EVIDENCE The approach described is based on the authors' clinical practices, recommendations from the Third Canadian Consensus Conference on Diagnosis and Treatment of Dementia, and guidelines from the 2003 Canadian Cardiovascular Society Consensus Conference.

MAIN MESSAGE When assessing fitness to drive in patients with multiple, complex health problems, physicians should divide conditions that might affect driving into acute intermittent (ie, not usually present on examination) and chronic persistent (ie, always present on examination) medical conditions. Physicians should address acute intermittent conditions first, to allow time for recovery from chronic persistent features that might be reversible. Decisions regarding fitness to drive in acute intermittent disorders are based on probability of recurrence; decisions in chronic persistent disorders are based on functional assessment.

CONCLUSION Assessing fitness to drive is challenging at the best of times. When patients have multiple comorbidities, assessment becomes even more difficult. This article provides clinicians with systematic approaches to work through such complex cases.

Résumé

OBJECTIF Aider le médecin à se sentir plus à l'aise pour évaluer la capacité de conduire des patients présentant des conditions cardiaques et cognitives complexes.

QUALITÉ DES PREUVES La méthode décrite est fondée sur l'expérience clinique de l'auteur, sur les recommandations de la Troisième conférence canadienne de consensus sur le diagnostic et le traitement de la démence, et sur les directives de la Conférence canadienne de consensus 2003 de la Société canadienne de cardiologie.

PRINCIPAL MESSAGE Lorsqu'il évalue la capacité de conduire de patients présentant des problèmes de santé multiples et complexes, le médecin devrait distinguer, parmi les conditions médicales susceptibles d'affecter la conduite, celles qui sont aiguës intermittentes (c.-à-d. généralement absentes lors de l'examen) et celles qui sont chroniques persistantes (c.-à-d. toujours présentes lors de l'examen). Il devrait d'abord s'occuper des conditions aiguës intermittentes pour laisser le temps aux conditions chroniques persistantes potentiellement réversibles de guérir. Pour les problèmes aigus intermittents, la décision repose sur la probabilité de récurrence; pour les problèmes chroniques persistants, elle repose sur l'évaluation fonctionnelle.

CONCLUSION L'évaluation de la capacité de conduire est presque toujours difficile. En présence de facteurs multiples de morbidité, la difficulté est encore plus grande. Cet article suggère une approche systématique pour aborder ces cas particulièrement complexes.



This article is eligible for Mainpro-M1 credits. To earn credits, go to www.cfp.ca and click on the Mainpro link.

Case description

Mr M. is an 84-year-old widower living alone. His medical history includes diabetes with mild peripheral neuropathy and coronary artery disease with a remote myocardial infarction (MI). His daughter telephones you to report that over the past 6 months Mr M. has become repetitive and has been making increasingly frequent errors in banking activity and medication use. Before you have a chance to assess him, he is admitted to hospital with delirium, hyperglycemia, hypotension secondary to dehydration and medication overuse, syncope, and a non-ST-segment elevation MI.

Mr M. experiences several bouts of sustained, hemodynamically significant ventricular tachycardia (VT) and is eventually fitted for an implantable cardioverter defibrillator (ICD). He is found to have triple-vessel disease, which is not amenable to any revascularization procedure, and has a left ventricular ejection fraction (EF) of 28%, with moderate to severe mitral regurgitation; he is stabilized after beginning a regimen of acetylsalicylic acid, a statin, a β -blocker, amiodarone, an angiotensin-converting enzyme inhibitor, and a nitrate.

Upon discharge, Mr M. and his daughter are told that he “should not drive for a few months” and that you, his family physician, will have to decide when it is safe for him to drive. When you see him, he asks when he can resume driving. Notable findings on examination include symptomatic postural hypotension, slow mentation, and a Mini-Mental State Examination score of 22 out of 30. He denies any symptoms of angina and has New York Heart Association (NYHA) functional class II symptoms. His most recent ICD check was unremarkable, with no evidence of recurrent sustained arrhythmias or delivery of device therapies. What should you do?

Sources of information

The approach described below is based on the authors’ clinical practices, recommendations from the Third Canadian Consensus Conference on Diagnosis and Treatment of Dementia (www.cccdt.ca/pdfs/Final_Recommendations_CCCDTD_2007.pdf),¹¹ and the 2003 Canadian Cardiovascular Society Consensus Conference guidelines (www.ccs.ca/download/consensus_conference/consensus_conference_archives/2003_Fitness.pdf).¹²

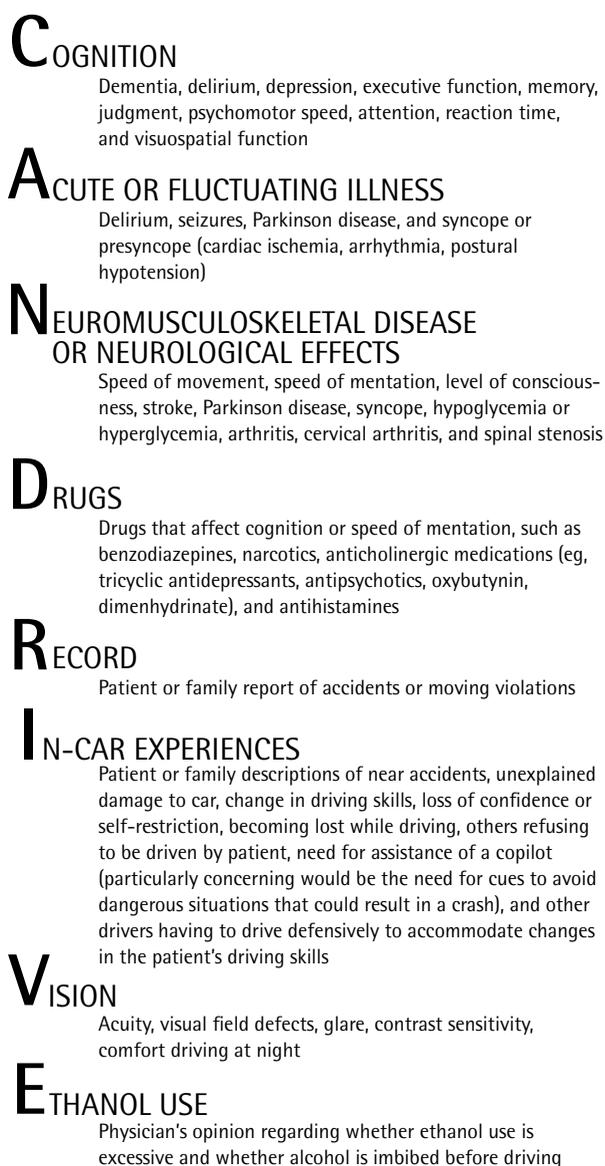
Main message

When faced with complex cases, general lists such as the CanDRIVE mnemonic presented in **Figure 1** can have limitations. **Figure 1** does not represent a scale with a scoring template, but rather a guide to what information physicians should gather to allow them to best employ their clinical judgement regarding fitness to drive.

Furthermore, general lists such as this do not provide guidance on how to sequence complex assessments.

A helpful addendum can be borrowed from the decades-long history of dividing medical conditions into acute versus chronic conditions, which has inevitably been adapted to ascertain medical fitness to drive.^{1,10,13} A further enhancement of the acute versus chronic distinction is to divide the problems identified into acute intermittent and chronic persistent disorders. Chronic persistent disorders can be further divided into reversible versus irreversible conditions. *Acute intermittent* disorders—known as “acute or fluctuating illnesses” in the CanDRIVE mnemonic—are medical problems that can suddenly incapacitate an otherwise low-risk driver. The symptoms associated with these

Figure 1. The CanDRIVE fitness to drive mnemonic



Adapted from Molnar et al¹ with permission.

conditions (eg, syncope, seizures) can cause sudden changes in cognition or level of consciousness but cannot be detected by examination, as they are not present most of the time. Decisions regarding when patients can resume driving are based on the probability of recurrence. *Chronic persistent* disorders are medical problems that are present at all times and can be detected by examining and testing patients.

In the case of Mr M., first decide when he might resume driving based on the diagnosed acute intermittent disorders (eg, post-MI, arrhythmia treated with ICD). This will provide time for recovery from any associated chronic persistent features that might be reversible (eg, delirium, postural hypotension), allowing for a more accurate assessment of irreversible chronic persistent conditions (eg, dementia). To demonstrate, we will discuss each of these issues in turn.

Assessment for acute intermittent disorders

Post-MI (level III evidence).¹² Private drivers (ie, those with noncommercial licences) who have suffered non-ST-segment elevation MIs with substantial left-ventricle damage can resume driving 1 month after the event, presuming there are no additional comorbidities that impose a longer waiting period. This recommendation is based on the rapidly decreasing risk of serious

arrhythmias, myocardial rupture, and symptomatic heart failure after the first month, and allows a “stabilization” phase for new medical therapy. If patients have undergone coronary artery bypass grafting, they must wait 3 months before resuming driving.

Ischemic cardiomyopathy (level III evidence).¹² In addition to having suffered a recent MI, the patient was also found to have substantial cardiomyopathy, with an EF of 28%. The moderate to severe mitral regurgitation indicates that some of the EF might be moving in a backward direction, and that the forward EF is likely less than 28%. While ischemic cardiomyopathy is a persistent condition, the risk posed in a driving context is that of cardiac arrhythmias and sudden death—acute intermittent conditions. Patients with severe cardiomyopathy who are private drivers face no restriction if they have NYHA class I (ie, no symptoms and no limitation in ordinary physical activity), class II (ie, mild symptoms [such as mild shortness of breath or angina] and slight limitation during ordinary activity), or class III (ie, marked limitation in activity due to symptoms, even during less-than-ordinary activity such as walking short distances) symptoms. In contrast, commercial drivers with an EF of less than 35% are no longer eligible for licensure, and commercial drivers with NYHA class III or IV (ie, severe limitations, with symptoms experienced even while at rest) symptoms are deemed ineligible to drive regardless of their EF.

Grades for recommendations for specific clinical actions

Grade A: Good evidence to recommend the clinical action

Grade B: Fair evidence to recommend the clinical action

Grade C: Existing evidence conflicts and does not allow making a recommendation for or against taking the clinical action; however, other factors might influence decision making

Grade D: Fair evidence to recommend against the clinical action

Grade E: Good evidence to recommend against the clinical action

Grade I: Insufficient evidence to make a recommendation; however, other factors might influence decision making

Levels of evidence

Level I: At least one properly conducted randomized controlled trial, systematic review, or meta-analysis

Level II: Other comparison trials, non-randomized, cohort, case-control, or epidemiologic studies, and preferably more than one study

Level III: Expert opinion or consensus statements

Ventricular tachycardia and ICD implant (level III evidence).¹² The patient suffered hemodynamically unstable VT and was implanted with an ICD for secondary prevention indications. The presence of VT makes the patient ineligible to drive for 6 months (during which time there must be no recurrences). The implantation of the ICD for secondary prevention also imposes a 6-month restriction.

The Canadian Cardiovascular Society guidelines state that when more than one disqualifying medical condition is present at the same time, the most restrictive recommendation is to be applied (level III consensus).¹² Therefore, for this patient’s cardiac disease portfolio, a 6-month suspension from driving is recommended, during which time he must have no recurrence of his VT, must not have another MI, and must not deteriorate to NYHA class IV symptoms.

Assessment of chronic persistent disorders

Delirium. In the period following discharge from hospital, residual delirium is a concern. Florid delirium is characterized by the following features: sudden onset and short duration; new-onset unpredictable hourly fluctuations in cognition; new-onset hallucinations; decreased attention or concentration; and changes in level of consciousness. When patients recover from such obvious deliriums in hospital, it can still take weeks to months for their mentation to return to normal. Many suffer from a

slowly resolving subclinical delirium, which presents as slow mentation, decreased attention (ie, decreased focus), and altered scores on cognitive tests.

Those with an underlying dementia are more prone to developing delirium (ie, recurrent delirium or delirium precipitated by minor stresses are red flags suggesting underlying dementia). When such patients become delirious, the delirium often takes longer to resolve (weeks or months) and resolution might be incomplete, leaving them with permanent cognitive loss. The dementia is often “unmasked” by the delirium, leaving family members with the impression that the dementia began during hospitalization.

In Mr M.’s case the slow mentation suggests delirium, and the history of cognitive difficulties over the previous 6 months suggests an underlying dementia. It would be reasonable to tell the patient that he cannot drive for 6 months owing to his cardiac issues, during which time his noncardiac issues can be assessed and treated (**Figure 1**). During this recovery time, the physician can wean Mr M. off medications that might be contributing to the delirium (eg, benzodiazepines, narcotics), search for and treat reversible causes (eg, infection, postural hypotension [**Box 1**]), and decide if it is safe for Mr M. to continue living alone (eg, assess risks of malnutrition, medication errors, falls, fire, and inability to address emergencies). Should relocation to a supervised setting become necessary, the family can be directed to online resources (such as “Home to Retirement Home: A Guide for Caregivers of Persons with Dementia,” available from www.rgpeo.com/en/resources/RRR_Guide_Sept_09.pdf). As the delirium clears in a safe setting, the physician can assess the patient to determine if he has an underlying dementia.

Dementia. The assessment of fitness to drive in dementia is based on very limited evidence. Guidelines recommend employing the Mini-Mental State Examination,¹⁰ the clock-drawing test,¹⁴ and the Trail Making Test (parts A and B).¹⁵ In more advanced stages of dementia, performance on these cognitive tests might be so impaired that it will be clear that it would be unsafe for the patient to resume driving, and further testing is not required. Furthermore, driving is contraindicated in moderate to severe dementia, defined as a loss of the ability to perform 2 instrumental activities of daily living or 1 activity of daily living (grade B, level III evidence), owing to cognitive decline rather than physical disability.^{10,11} Activities of daily living and instrumental activities of daily living are reviewed in **Figure 2**.^{10,16}

The true clinical challenge lies in the assessment of patients with mild dementia who require individualized assessment (grade B, level III evidence).¹¹ In persons with mild dementia, the approach to assessment is relatively unstudied—a recent systematic review has demonstrated that no in-office cognitive tests have well-validated cut-off scores predicting fitness to drive in dementia (level I evidence).¹⁷ In recognition of this “evidence-based vacuum,” the Canadian Institutes of Health Research has

Box 1. Common causes of postural hypotension: 3D-AID acronym.

Causes associated with a compensatory tachycardia—**3Ds**

Deconditioning

Dehydration

Disease

Drugs

Diuretics

Anorexic drugs—narcotics, digoxin, antibiotics, cholinesterase inhibitors

Drugs—**6 anti**'s

Antihypertensives

Antianginals

Antiparkinsonian medications (eg, levodopa and carbidopa)

Antidepressants (eg, anticholinergic tricyclics)

Antipsychotics (anticholinergic effects)

Anti-benign prostatic hypertrophy medications (eg, terazosin hydrochloride, tamsulosin hydrochloride)

Causes that present with *lack of* compensatory tachycardia—**AID**

Autonomic dysfunction

Diabetic autonomic neuropathy (ie, consider if patient has peripheral neuropathy)

Low levels of vitamin B12

Hypothyroidism

Ethanol abuse

Parkinsonism (ie, Parkinson disease, progressive supranuclear palsy, multisystem atrophy)

Idiopathic conditions (ie, pure autonomic failure)

Depletion of norepinephrine from sympathetic nerve terminals

Drugs

β-Blockers

funded a 5-year longitudinal prospective cohort study (www.candrive.ca) to derive and validate screening tests for fitness to drive that can be employed in front-line clinical settings. While we wait for the results of this research study, physicians can consider employing the experience-based approach to the assessment of fitness to drive in dementia depicted in **Figure 2**.^{10,16} This figure does not represent a scale with a scoring template, but rather a practical sequence of steps to follow to gather information, allowing physicians to best employ their clinical judgment regarding fitness to drive.

Some patients’ fitness to drive might be too borderline to assess in a clinical setting; they will require on-road testing (grade B, level III evidence).¹¹ When sending persons with dementia for on-road testing, it is important to let them know that if they pass they might need to repeat the on-road test every 6 to 12 months as the dementia progresses.¹⁸ Many patients will not pursue on-road testing when informed of this

Figure 2. Dementia and driving checklist for use by physicians and health care professionals*

Given the following findings, would you be willing to get into a car (or would you allow your children or grandchildren to get into a car) with your patient driving? (Note that it is not necessary to complete all items if it is obvious that the patient is unsafe to drive based on early items)

Problem

1. Functional impact of the dementia

According to CMA guidelines,¹⁰ patients are unsafe to drive if they demonstrate the following:

- impairment of >1 IADL *due to cognition* (IADLs SHAFT mnemonic: Shopping; Housework/Hobbies; Accounting [banking, bills, taxes]; Food preparation; Telephone /Tools/Transportation [driving])
- impairment of ≥1 personal ADLs *due to cognition* (ADLs DEATH mnemonic: Dressing; Eating; Ambulation; Toileting/Transfers; Hygiene)

2. Family concerns (to be asked away from the patient)

- Family members feel safe or unsafe in the car with the patient (and have recently been in the car with the patient)
- The child safety question: Would you feel it was safe if a 5-year-old child were alone in the car while the patient was driving? (Often a different response from family member's answer to previous question)
- Generally, if family members believe the patient is unsafe to drive, he or she usually is. If family members believe the patient is safe to drive, he or she *might still be unsafe to drive*, as family members might be unaware or might be protecting the patient

3. Physical inability to operate a car

- Medical or physical concerns, such as musculoskeletal problems, weakness, hindered neck turn, problems using steering wheel or pedals, cardiac or neurological problems, episodic cardiac or neurologic "spells," or other multiple medical conditions that inhibit the patient's ability to operate a vehicle

4. Visuospatial issues

- Substantial problems relating to visual acuity and field of vision, inability to draw intersecting pentagons, and substantially abnormal results of the clock-drawing or cube-drawing tests

5. Drowsiness, slow reaction time, and lack of focus

Review potentially contributory medical conditions (eg, sleep apnea, delirium, depression) or medications that might represent potentially reversible factors:

- alcohol, benzodiazepines, narcotics, antipsychotics, and sedatives
- anticholinergic medications (antiparkinsonian drugs, muscle relaxants, tricyclics, OTC antihistamines, antiemetics, antipruritics, antispasmodics, etc)

6. Trail Making Test, parts A and B (available from www.cgs-sgc.ca)

- Trail Making A: Sample trail A, full trail A, and sample trail B should be performed *before* full trail B
- Trail Making B: *Safe* = < 2 minutes and < 2 errors (0 or 1 error)
Unsure = 2 to 3 minutes or 2 errors (consider qualitative dynamic information regarding how the test was performed—slowness, hesitation, anxiety or panic attacks, impulsive or perseverative behaviour, lack of focus, multiple corrections, forgetting instructions, inability to understand test, etc)
Unsafe = > 3 minutes or ≥ 3 errors (the longer the patient takes and the more errors they make, the more certain you can be that they are unsafe)

Conclusion



Safe Review fitness to drive every 6 to 12 months. Ask family members to call you if sudden changes in health occur (eg, review signs of delirium)



Unsafe Tell patient to stop driving and report to MOT
Give patients a letter to remind them they are not to drive
Keep documentation of report to MOT in chart



Unsure Refer for further assessment

ADL—activity of daily living, CMA—Canadian Medical Association, IADL—instrumental activity of daily living, MOT—Ministry of Transportation, OTC—over the counter.
 *This figure is a shortened version of the 10-minute office-based dementia and driving checklist for use by physicians and health care professionals¹⁶; based on clinical opinion and experience, not evidence.
 Adapted from Molnar et al¹⁶ with permission.

Resources

For more information on the assessment of fitness to drive in patients with dementia, please refer to the following resources:

- The Canadian Geriatrics Society: <http://cgs-sgc.ca>
- Ontario Alzheimer Knowledge Exchange Resource Centre: www.akeresourcecentre.org/DrivingPhys
- *The Driving and Dementia Toolkit*: www.champlaindementianetwork.org/uploads/Resources/kitjune09.pdf
- Regional Geriatric Program of Eastern Ontario: www.rgpeo.com/en/resources/professionals.php

For more information on cardiac illness and fitness to drive, please refer to the Canadian Cardiovascular Society's Assessment of the Cardiac Patient for Fitness to Fly and Drive final report:

- www.ccs.ca/download/consensus_conference/consensus_conference_archives/2003_Fitness.pdf.

possibility. The cost of specialized comprehensive on-road tests varies from \$50 to \$800 (to be paid by the patient), depending on the province. The high costs in some provinces might discourage physicians from assessing fitness to drive, as it places physicians in the undesirable position of presenting patients with an ultimatum: pay for expensive on-road tests or stop driving. This type of interaction is destructive to physician-patient relationships and is unfair to patients of limited financial means. This barrier must be addressed at the provincial level by either improving funding to ministries of transportation so they can fund comprehensive on-road testing or involving organizations that would financially benefit from better funding of comprehensive on-road testing. When people are involved in car crashes, it is the ministries of health and the insurance industry that pay the extremely high immediate and long-term costs of care and disability. The health care system and the insurance industry could potentially save taxpayers and investors millions of dollars by funding comprehensive on-road tests. In order to improve access to well-funded on-road testing, medical organizations and patient advocacy groups need to push for such a shared-payer system.

Some patients with very mild or mild dementia might be determined to be safe to drive, albeit temporarily. In such cases the discussion of eventual driving cessation should be broached (grade B, level II evidence),¹¹ and follow-up assessment of fitness to drive must be arranged approximately every 6 to 12 months (grade B, level III evidence).^{11,18} When assessment results indicate that patients are unsafe to drive, physicians must then engage in the often painful and emotionally charged process of disclosing findings. To view a step-by-step approach to disclosing to a patient that they are not fit to drive, we recommend *The Driving and Dementia Toolkit*, made jointly available by the Regional Geriatric Program of Eastern Ontario and the Champlain Dementia Network.¹⁹

EDITOR'S KEY POINTS

- Assessment of fitness to drive is an important societal role for family physicians, and can help prevent further injury to patients and others; however, if a patient presents with multiple comorbidities, assessment can be difficult.
- To better organize their assessments of fitness to drive, physicians should divide conditions into *acute intermittent* (ie, not usually present on examination) and *chronic persistent* (ie, always present on examination) medical conditions. They should further divide the chronic persistent conditions into *reversible* and *irreversible* disorders.
- Decisions regarding fitness to drive in acute intermittent disorders are based on probability of recurrence, while decisions in chronic persistent disorders are based on functional assessment.
- Guidelines are available for assessing fitness to drive for various conditions; for patients with multiple affecting factors, the most restrictive recommendation should be applied.
- Some patients' fitness to drive might be too borderline to assess in office; these patients often require on-road testing, which can be costly. Funding strategies to reduce costs of comprehensive road testing should be examined further.

POINTS DE REPÈRE DU RÉDACTEUR

- L'évaluation de la capacité de conduire est un rôle sociétal important pour le médecin de famille puisqu'il peut contribuer à prévenir des blessures éventuelles aux patients comme aux autres personnes; cette évaluation peut toutefois s'avérer difficile lorsque le patient présente plusieurs états de comorbidité.
- Afin de mieux gérer son évaluation de la capacité de conduire, le médecin devrait distinguer les conditions médicales *aiguës intermittentes* (c.-à-d. généralement absentes lors de l'examen) et les conditions *chroniques persistantes* (c.-à-d. toujours présentes lors de l'examen). De plus, il devrait diviser les conditions chroniques persistantes en *réversibles* et *irréversibles*.
- Dans le cas de problèmes aigus intermittents, la décision concernant la capacité de conduire dépendra de la probabilité de récurrence, alors que dans les conditions persistantes, elle sera basée sur l'évaluation fonctionnelle.
- Il existe des directives sur l'évaluation de la capacité de conduire dans différentes conditions médicales; pour les patients qui présentent plusieurs facteurs de risque, les recommandations les plus restrictives devraient être appliquées.
- La capacité de conduire de certains patients peut être difficile à évaluer au bureau et une évaluation de la conduite sur route est parfois nécessaire, ce qui peut être onéreux. Il faudrait penser à des stratégies de financement pour réduire le coût de ces tests sur route.

Conclusion

Assessing fitness to drive is challenging at the best of times. When one encounters layered comorbidities, as demonstrated in the case presented here, the assessment becomes even more difficult. This article provides clinicians with systematic approaches to working through such complex cases. For those interested in learning more about assessment of fitness to drive in patients with cognitive and cardiac issues, a number of resources exist. 🍁

Dr Molnar is a member of the Canadian Institutes of Health Research CanDRIVE research team at the Ottawa Hospital Research Institute in Ontario and an Associate Professor in the Division of Geriatric Medicine at the University of Ottawa. **Dr Simpson** is an Associate Professor of Medicine in the Division of Cardiology at Queen's University in Kingston, Ont, and Co-Chair of the Canadian Cardiovascular Society Consensus Conference on Assessment of the Cardiac Patient for Fitness to Drive and Fly.

Acknowledgment

Dr Simpson is supported by an operating grant from the Heart and Stroke Foundation of Ontario.

Contributors

Drs Molnar and **Simpson** contributed to the literature search and to preparing the manuscript for submission.

Competing interests

None declared

Correspondence

Dr Frank J. Molnar, Ottawa Hospital, Civic Campus, 1053 Carling Ave, Ottawa, ON K1Y 4E9; telephone 613 798-5555, extension 16486; fax 613 761-5334; e-mail fmolnar@ottawahospital.on.ca

References

- Molnar FJ, Byszewski AM, Marshall SC, Man-Son-Hing M. In-office evaluation of medical fitness-to-drive. Practical approaches for assessing older people. *Can Fam Physician* 2005;51:372-9.
- Krumholz A, Fisher RS, Lesser RP, Hauser WA. Driving and epilepsy. A review and reappraisal. *JAMA* 1991;265(5):622-6.

- Harvey P, Hopkins A. Views of British neurologists on epilepsy, driving, and the law. *Lancet* 1983;1(8321):401-4.
- Bornemann MT. Viewpoint of a driver with epilepsy. *Epilepsia* 1994;35(3):665-7.
- Dickey W, Morrow JJ. Epilepsy and driving: attitudes and practices among patients attending a seizure clinic. *J R Soc Med* 1993;86(10):566-8.
- Taylor J, Chadwick DW, Johnson T. Accident experience and notification rates in people with recent seizures, epilepsy or undiagnosed episodes of loss of consciousness. *QJM* 1995;88(10):733-40.
- Dalrymple J, Appleby J. Cross sectional study of reporting of epileptic seizures to general practitioners. *BMJ* 2000;320(7227):94-7.
- Lee W, Wolfe T, Shreeve S. Reporting epileptic drivers to licensing authorities is unnecessary and counterproductive. *Ann Emerg Med* 2002;39(6):656-9.
- Simpson CS, Hoffmaster B, Mitchell LB, Klein GJ. Mandatory physician reporting of drivers with cardiac disease: ethical and practical considerations. *Can J Cardiol* 2004;20(13):1329-34.
- Canadian Medical Association. *CMA driver's guide. Determining medical fitness to operate motor vehicles*. 7th ed. Ottawa, ON: Canadian Medical Association; 2006. Available from: www.cma.ca/index.cfm/ci_id/18223/la_id/1.htm. Accessed 2010 Sep 28.
- Third Canadian Consensus Conference on Diagnosis and Treatment of Dementia [website]. *Recommendations*. Montreal, QC; 2007. Available from: www.cccdt.ca/pdfs/Final_Recommendations_CCCDTD_2007.pdf. Accessed 2010 Sep 28.
- Simpson C, Ross D, Dorian P, Essebag V, Gupta A, Hamilton R, et al. CCS Consensus Conference 2003: assessment of the cardiac patient for fitness to drive and fly—executive summary. *Can J Cardiol* 2004;20(13):1313-23.
- Dobbs BM. *Medical conditions and driving: a review of the literature (1960-2000)*. Washington, DC: National Highway Traffic Safety Administration; 2005. Report no. DOT HS 809 690. Available from: www.nhtsa.gov/people/injury/research/medical_condition_driving/pages/TRD.html. Accessed 2010 Sep 28.
- Carr DB, Schwartzberg JG, Manning L, Sempek J. *Physician's guide to assessing and counseling older drivers*. 2nd ed. Washington, DC: National Highway Traffic Safety Administration; 2010. Available from: www.ama-assn.org/ama1/pub/upload/mm/433/older-drivers-introduction.pdf. Accessed 2010 Sep 28.
- Hogan DB, Bailey P, Carswell A, Clarke B, Cohen C, Forbes D, et al. Management of mild to moderate Alzheimer's disease and dementia. *Alzheimers Dement* 2007;3(4):355-84. Epub 2007 Sep 17.
- Molnar FJ, Byszewski AM, Rapoport M, Dalziel WB. Practical experience-based approaches to assessing fitness to drive in dementia. *Geriatr Aging* 2009;12(2):83-92.
- Molnar FJ, Patel A, Marshall SC, Man-Son-Hing M, Wilson KG. Clinical utility of office-based predictors of fitness to drive in persons with dementia: a systematic review. *J Am Geriatr Soc* 2006;54(12):1809-24.
- Molnar FJ, Patel A, Marshall SC, Man-Son-Hing M, Wilson KG. Systematic review of the optimal frequency of follow-up in persons with mild dementia who continue to drive. *Alzheimer Dis Assoc Disord* 2006;20(4):295-7.
- Champlain Dementia Network, Regional Geriatric Program of Eastern Ontario. *The driving and dementia toolkit for health professionals*. 3rd ed. Ottawa, ON: Champlain Dementia Network; 2009. Available from: www.champlaindementianetwork.org/uploads/Resources/kitjune09.pdf. Accessed 2010 Oct 14.

