Fitness to Drive

Practice Based Small Group Learning Program Vol. 29 (1), February 2021

INTRODUCTION

Medical conditions and the effects of medications and substances are among the most common causes of declines in driving ability. As a result, primary care clinicians are key to identifying, assessing and managing medically compromised drivers. This process remains a challenge, however, owing to several factors: less-than-optimal screening tools; difficulty assessing the functional impact of medical conditions on driving skills in the office; insufficient access to specialized driving assessment centres; patient/family reluctance to discuss driving history or confront driving cessation; and diverse reporting responsibilities for a wide range of driving scenarios.

OBJECTIVES

This module will enable clinicians to:

- Encourage a more proactive approach to fitness to drive through anticipatory guidance and early identification of potential warning signs of driving challenges.
- Build confidence in assessing and reporting unsafe drivers and identifying resources that are available for drivers who need further functional assessment.
- Increase practitioner comfort in addressing driving concerns with patients and their family members/caregivers.

CONTENTS

CASES

Case 1: Ravi, male, age 66

Ravi presents with his wife who is concerned because her husband seems to be forgetting and misplacing things. His past medical history includes hospitalization for a head injury at age 3, hyperlipidemia, right detached retina and a 23-pack-year history of cigarette smoking.

His medications include rosuvastatin 20 mg PO daily and vitamin D 1,000 IU daily.

His mother was diagnosed with Alzheimer's dementia at age 64. His father died at age 68 with coronary artery disease and congestive heart failure.

Ravi lives with his wife at his rural retirement property and has 2 children and 1 granddaughter who keep him active. He is still driving.

What further information would you require to ascertain Ravi's capacity to drive?

Part Two

Ravi's wife has no concerns regarding her husband's driving or recent close calls. Ravi was prescribed new corrective lenses earlier in the year. He denies drug or alcohol use, daytime sleepiness or feeling down. Ravi's Mini-Mental State Examination (MMSE) is 26/30 (normal). His Montreal Cognitive Assessment (MoCA) is 22 (+ 1 for Grade 12 = 23/30) with issues for alternating Trail Making, delayed recall and abstraction. Clock drawing is normal. Ravi completes Trail A in 115 seconds with no errors and Trail B in 120 seconds with 1 error. Ravi is independent for basic activities of daily living (ADLs) and instrumental ADLs (iADLs).

Laboratory findings reveal low vitamin B_{12} (104 pmol/L), A1C 5.8% and TSH 3.0 IU/L. The remainder of the results are within normal ranges. His PHQ-9 is negative for depression and STOP-Bang is negative for obstructive sleep apnea. These tools can be accessed at the sites below:
PHQ-9: https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/depression_patient_health_questionnaire.pdf
STOP-Bang: http://www.stopbang.ca/osa/screening.php

How would you approach Ravi's capacity to drive?

Part Three—Eighteen months later

You receive a call from Ravi's daughter because she is worried about her father. She has become increasingly aware of a decline in her father's cognitive function. She states that her father has refused to book any follow-up appointments as he does not believe he has any memory issues. Her parents think that it is just a vitamin issue. The daughter voices her concerns regarding his worsening memory loss, inability to follow simple instructions, difficulty forming sentences, lack of interest in social activities and mood changes—he snaps at anyone trying to help, and is anxious and confused.

Functionally, he can no longer manage the household bills or his own medication. She states she has concerns about her father's driving ability and avoids leaving her daughter at her parents' place to babysit. She is worried about her parents' reaction if she brings up her fears as her mother does not drive.

How would you address his daughter's concerns?

Part Four—Three weeks later

Ravi comes in for an assessment. His wife and daughter are also in attendance. His MoCA score is 14 (+ 1 for Grade 12 = 15/30). He completes a Trail B in 200 seconds with 5 errors.

With the change in his MoCA score and corroborating history of functional impairment, Ravi likely has progressive Alzheimer's dementia. You discuss your concerns regarding his ability to drive safely. Ravi and his wife are shocked that you would question his ability to drive as they have noted no problems.

How would you approach this situation?

Case 2: Diego, male, age 60

Diego is a school bus driver who presents with his province's commercial driver's licence renewal form. He has been driving for 43 years. Past medical history includes moderate-to-severe right sensorineural hearing loss and profound left-sided hearing loss, type 2 diabetes (well controlled), asthma, COPD, early cataracts, and chronic cervical and thoracolumbar pain.

His medications include salbutamol (1–2 inhalations every 4–6 hours PRN), metformin (500 mg BID), salmeterol–fluticasone (Advair) 25/250 (1 inhalation BID), tiotropium bromide (Spiriva Respimat) (2.5 mcg/inhalation, 2 inhalations daily), oxycodone (5 mg) and acetaminophen (325 mg every 4–6 hours PRN).

Diego recently moved into a subsidized apartment. He was living in a shelter before. He is currently in debt and needs the income from his job. He admits that he has not been wearing his hearing aids for a couple of months but can hear sirens without them.

What further information would you require at this time?

Part Two

Diego states he has a clean driving record with no near misses and provides accolades regarding his driving to date. He denies any changes in his memory or driving habits, as well as any history of falls, balance issues or loss of consciousness. Diego admits he has not repaired his hearing aids due to his financial challenges. He does wear his glasses while driving. He has been taking a regular dose of oxycodone (1 tablet TID) for his neck pain. He does not report any morning drowsiness or daytime sleepiness, and denies any alcohol or illicit drug use.

On examination, without correction Diego's visual acuity is 20/200 bilaterally; with correction right eye is 20/40 and left eye is 20/30 –2. Visual fields are intact. Gait and stance are within normal limits. He has normal forward flexion of his neck with limited rotation (30° bilaterally) and lateral bending (10° bilaterally). His trunk rotation is limited bilaterally (15°). The range of motion and strength of his upper and lower extremities are within normal limits. The rest of his musculoskeletal and neurologic exams are normal. He has a slight expiratory wheeze. Apical pulse rate is 88 and regular. S1 S2 heart sounds are normal—no murmur.

What would be your plan of care for Diego?

Case 3: Ethan, male, age 31

Ethan presents with concerns regarding his ongoing anxiety and difficulty sleeping. His past medical history includes anger management issues, ADHD and Cluster B traits suggesting conduct disorder. He has declined any psychotropics in the past.

Ethan is single with no dependents, is currently unemployed and lives with his mother. He states he has been smoking cannabis since age 14 which helps him unwind and deal with his anxiety. His current use varies from 4 to 5 joints (2.0–2.5 g) per day, depending on his stress level. He denies the use of other substances, except the occasional beer. He does admit to driving while high but does not think it affects his ability to drive in any way, as he has a clean driving record. He does not want to change his smoking habits and declines any medical intervention. You diagnose cannabis use disorder.

What would be your next steps?

Part Two—Two months later

Ethan returns for assessment of a sudden onset dysuria. You ask him how he got to the appointment and he states that he drove. On questioning, he admits that his cannabis use is unchanged, and he has been continuing to drive without any issues.

What would be your obligation, knowing that Ethan is still driving while high?

INFORMATION SECTION

BACKGROUND

1. Approximately 2,000 people in Canada die as a result of motor vehicle crashes every year and another 160,000 are injured.[1]
   a) Older drivers are at increased risk of multiple-vehicle crashes, and accident-related injuries and fatalities.
   b) Fatal crashes involving older drivers are predicted to increase 155% by 2030. Higher crash rates are mainly due to medical conditions (particularly cognitive impairment) associated with aging, but not due to age itself.[2-4]

2. Driving safely depends on the ability to coordinate many complex functions—visual acuity and perception, cognitive abilities (e.g., executive function, multi-tasking) and neuromuscular function.[5]
   a) As their driving skills diminish, older drivers tend to score themselves higher than their actual driving ability. When self-rating driver performance, older drivers (> age 65) who saw themselves as at least a little better than others of the same age were 4 times more likely to be unsafe drivers compared to those who believed they were as good as or worse than other drivers their own age—relative risk 4.13 (95% CI 1.08–15.78).[6]
   b) Spouses and other family members often underestimate driving risk and overestimate driver competence.[4]

Relative Risk or Risk Ratio (RR)
The EER* divided by the CER**—measure of the probability (risk) of developing a disease for those exposed to a medication/risk factor compared to those who are not. Hazard ratio (HR) is a similar concept.
* Experimental event rate (EER): The Percentage of people in the treatment group experiencing the outcome (may be a good outcome or a bad outcome).
** Comparison event rate (CER): The percentage of people in the comparison group experiencing the outcome.

3. Commercial drivers who operate passenger-carrying vehicles, trucks and emergency vehicles require a higher level of driver fitness than those operating other private vehicles.[1]

INITIAL ASSESSMENT

4. Evaluation of medical fitness to drive often occurs when a patient presents with a driver fitness form from the motor vehicle licensing authority (MVLA).[1] An assessment should **also** be prompted by:
   a) Concerns from family members/caregivers regarding a patient's driving safety, unexplained damage to a patient's vehicle, speeding tickets and other violations, and near crashes or misses.
   b) Hospitalizations, new diagnoses (e.g., detached retina or stroke), episodic conditions (e.g., seizures or syncope) or worsening of chronic conditions such as a history of falls, peripheral neuropathy, recurrent hypoglycemia, neurodegenerative diseases and cognitive impairment.
   c) Alcohol or substance abuse.
   d) Medications that can impair driving ability.[1,5,7]

5. Table 1 can be used to review common causes that may prompt concerns about fitness to drive. Identification of these causes can inform a more focused evaluation.

Table 1. Initial Assessment[1,5,7-9]

Cognitive factors	Impairments in executive function, memory, judgment, psychomotor speed, attention, reaction time, visuospatial function.
Medical conditions: severe, chronic, poorly controlled, episodic, progressive or changing rapidly	Dementia, delirium, encephalopathy, depression. Diabetes. Parkinson's disease, multiple sclerosis, cerebrovascular event, peripheral neuropathy. Vision and hearing impairment. Cardiac disease. Arthritis, spinal stenosis. Seizures, syncope, presyncope. Sleep apnea. History of falls, gait impairment.
Medications that can impair driving ability	Anticholinergics, benzodiazepines, narcotics, Parkinson's medications, seizure medications. Antihistamines, muscle relaxants, motion sickness medications.
Driving record and in-car experiences	Patient or family/caregiver reports of: • Accidents, near accidents, traffic tickets, unexplained damage to car. • Change in driving skills, loss of confidence, self-restricted driving to a time of day or location, becoming lost while driving, needing a "co-pilot"—particularly the need for someone to provide cues (e.g., alerting the driver to traffic signs and signals) to avoid dangerous situations that could result in a crash. • Others refusing to be driven or having their loved one driven by the patient. • Other drivers having to drive defensively to accommodate the patient's driving skills.
Visual acuity	Visual impairment despite correction, poor visual contrast sensitivity, reduced comfort driving at night.
Alcohol, cannabis or other recreational drugs	Excessive use, imbibing before driving.

IN-OFFICE DRIVING ASSESSMENT

Note: The assessment outlined below focuses on those conditions featured in this module's patient cases. For a comprehensive overview of when and how to evaluate driver fitness for a wide range of conditions, see the Canadian Council of Motor Transport Administrators (CCMTA): *Determining Driver Fitness in Canada* and the Canadian Medical Association (CMA): *Driver's Guide: Determining Medical Fitness to Operate Motor Vehicles* (links to these documents are provided in Appendix 1).

Cognitive Impairment and Dementia

Appendix 2 provides a handy assessment tool for dementia and driving.

6. A 2012 Statistics Canada profile of seniors' transportation habits found that just over 50% of drivers with some level of cognitive impairment continued to drive, while 36% of drivers with serious impairment did so.[10] Cognitive impairment is associated with a two- to five-fold increased risk of motor vehicle crashes.[11]

7. When cognitive decline is suspected, a detailed history, physical exam and cognitive screening can identify functional impairment (see Appendix 2). Focused laboratory investigations can rule out medical causes of cognitive impairment or delirium, such as reduced kidney function, abnormal liver enzymes, hypercalcemia, hyperglycemia, vitamin B_{12} deficiency and hypothyroidism.[12]

8. There is no single in-office screening test that has sufficient sensitivity or specificity to be used as a sole determinant of fitness to drive in all situations.[1,7] Furthermore, no cognitive tests have had cut-off scores validated in patients with dementia.[9] However, certain tests do have some utility (see Table 2).
   a) **The CMA recommends administering more than one screening test.[1] A multi-test approach avoids reliance on a single test when assessing driver fitness.** A greater severity or number of concerning findings can increase a clinician's confidence that the patient might be unsafe to drive.[13]

b) If the results are markedly abnormal, a diagnosis of moderate or severe dementia should be considered, bearing in mind that this diagnosis is a contraindication to driving.[1,9]

Note: For information on using cognitive screening tests and scoring their results, see Table 2 and Appendix 2.

9. Currently, there is no firm guidance regarding when to report a patient with mild dementia to the MVLA, although it is clear that patients with moderate-to-severe dementia should be reported.[1]
   a) Determining when a patient has moved from mild to moderate dementia can be difficult. This determination is generally based on the loss of ADLs or iADLs (see Appendix 2 for further details).[1]
   b) As general rule, any clinician "who suspects that a patient's cognitive problems may affect safe driving should refer the patient for a functional driving assessment, either through an occupational therapy evaluation or directly to the MVLA."[1]

Table 2. Cognitive Screening Tests

Test	Utility

Mini-Mental State Examination (MMSE) https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/cogimp-smmse.pdf	• Limited sensitivity but good specificity.[9] This tool becomes more useful as dementia progresses.[14]
	• Use is supported by a large body of literature.[9]
	• MMSE on its own does not predict future motor vehicle crashes:
	  ○ 29–27, HR 1.06, 95% CI 0.93–1.22
	  ○ 26–24, HR 0.96, 95% CI 0.78–1.19
	  ○ < 24, HR 0.72, 95% CI 0.50–1.05)[15]
	This may be due to the fact that the MMSE primarily evaluates verbal cognitive function with a lesser emphasis on aspects that have greater effect on driving function—e.g., visual attention, spatial orientation and executive function skills.

Montreal Cognitive Assessment (MoCA) https://www.mocatest.org/the-moca-test/	• Good sensitivity but limited specificity.[9] • Supported by limited, poor quality evidence.[9] • A patient with a pre-established diagnosis of cognitive impairment is 1.36 times as likely to fail the road test with each one-point decrease in MoCA score. This is not observed in those without a diagnosis of cognitive impairment.[16]
Trail Making Tests (TMTs)—Parts A and B http://apps.usd.edu/coglab/schieber/psyc423/pdf/IowaTrailMaking.pdf	• A cohort study (n=404, age ≥ 70) assessed the on-road driving performance of drivers with no important cognitive or physical disorders. Overall, TMTs have a sensitivity of 63.6%, specificity of 64.9%, positive predictive value of 9.5% and negative predictive value of 96.9%.[17] • These results confirm that TMT testing is not specific enough to justify driving cessation without performing other investigations.[17] • A prospective study (n=134, older drivers, both healthy and cognitively impaired) found that the power of TMT-A and TMT-B is the lowest when clinicians need it most—identifying cognitively impaired patients whose driving skills are unsafe.[18]
Visuospatial Tests	• A meta-analysis (27 studies) found that deficits in visuospatial skills were most strongly associated with driving abilities in patients with dementia.[19] • Clock-drawing tests can be helpful but it is unclear which type and severity of errors indicate unsafe driving.[20]

10. The Screen for the Identification of Cognitively Impaired Medically At-Risk Drivers, A Modification of the DemTect (SIMARD MD) is a tool that identifies cognitively impaired, medically at-risk drivers. A small validation study (n=234) found that 80 and 87% of those predicted to fail and pass by the SIMARD MD did fail and pass the on-road evaluation, as predicted.[21] However, further evidence demonstrates this tool lacks precision, casting "too wide a net, often failing those who pass other standardized cognitive tests."[22] Furthermore, it favours drivers with post-secondary education over those without.[23,24]

11. When using screening tests and interpreting their results, it is important to consider the following:
   a) Are the test results consistent with the patient's clinical picture?
   b) Could the low scores be due to other factors such as a language barrier, low education, depression or anxiety?
   c) What is the trajectory of the patient's condition? Some conditions might improve (e.g., delirium) but others will progress (e.g., Alzheimer's).

d) Is it obvious the patient should not drive, given low scores, dangerous behaviours, significant physical limitations or functional impairment?
e) Does the patient's test performance reflect the scores? For example, the clock drawing might be perfect but, if the patient took 10 minutes to draw it, this might demonstrate that there are still concerns about driving fitness.
f) Would you let a loved one get into the car this patient is driving? Would you want a loved one crossing the street in front of the car this patient is driving? These questions may be particularly helpful when normal and impaired scores overlap. They could be considered by the clinician or patient's family member.
g) Are you clear on your role? **A clinician is responsible for reporting concerns to the MVLA, not to determine medical fitness to drive.**[1,20]

Drugs and Substances

12. An evaluation of fitness to drive should include a review of all OTC and prescription medications—taken alone or in combination—that can impair driving ability (Table 1). Patients taking medications that can impair the ability to drive should be advised not to drive until their response to the drug is known or the side effects no longer impair their driving.[1]

13. Patients should also be asked about their alcohol and substance use. This is particularly important for older patients, since the increased rate of drug interactions, lower alcohol metabolism and cognitive impairment can place this population at even greater risk.[5] Recent Canadian guidelines on alcoholic use disorder among adults recommend that all patients (including older adults) should be screened for alcohol use at least annually and at transitions of care such as admission to hospital [Moderate Evidence].[25]

14. It is important to screen for cannabis use. Driving under the influence of cannabis is an offence under the Criminal Code of Canada.[7]
    a) Cannabis is used before driving more often than any other drug—in some cases, even alcohol. A systematic review/meta-analysis of 9 observational studies found that driving under the influence of cannabis was associated with a significantly increased risk of motor vehicle collisions compared with unimpaired driving— odds ratio (OR) 1.92 (95% CI 1.35–2.73).[26] People who use cannabis have a 2 to 6 times higher crash rate compared to those not impaired.[27] From 2015 to 2018, males age 15 to 24 had the highest prevalence (20–39%) of driving under the influence of cannabis.[28]
    b) With legalization, patients may be more open about their cannabis use. The Centre for Effective Practice provides an excellent screening tool for non-medical cannabis (see Appendix 1).
    c) Advise patients that they should wait at least 5 hours before driving after inhaling cannabis (smoking or vaping) or 8 hours following oral ingestion (e.g., cookies or brownies). This range can vary, depending on the amount and potency of the cannabis and the individual patient.
    d) It is essential to inform patients of the current driving penalties in their province or territory if they drive under influence of cannabis.[7,29]

Neuromuscular Function

15. A decline in motor function, muscle strength and neck/trunk flexibility occurs with normal aging. Movement may also be limited by pain from diseases such as osteoarthritis.
    a) A population-based study (n=2,000, age > 70) found that frequent falls (2 or more per year) are associated with at-fault motor vehicle crashes—OR 2.21 (95% CI 0.97–5.06).[30]
    b) Driving impairment has also been associated with inability to reach above the shoulder or to walk for more than 1 block.[5]

Odds Ratio (OR)
The ratio of the odds of an event happening in an exposed group compared to the odds of it happening in an unexposed group. The odds of an event (outcome) is calculated as the number of those with the outcome compared to those who did not have the outcome. As an example: the *risk* of an outcome might be 25/100, while the *odds* would be 25/75.

16. A thorough evaluation is indicated if there is any concern that a patient's impairment might affect their driving ability, especially if the patient drives a passenger-carrying or commercial transport vehicle.[1]
    a) Assessment of neuromuscular function is recommended—neurologic and musculoskeletal exams (paying special attention to the patient's range of motion, motor strength and gait speed).[5]
    b) Some loss of movement of the head and neck may be permissible, but the use of accommodations (such as panoramic mirrors which reduce the need to do full shoulder checks) are important.[1]

17. Although the evidence is mixed, there is moderate evidence supporting the use of the Rapid Pace Walk test.[31-33] One study (n=294, age ≥ 65) found that poor performance on the Rapid Pace Walk test was associated with failing a driving test—adjusted OR 1.45 (95% CI 1.05–2.00).[32] This test has not been found useful in predicting crashes or driving citations.[34]
    Note: With the Rapid Pace Walk test, patients are timed while they walk a total of 6 metres (20 feet)—3 metres (10 feet) forward and 3 metres (10 feet) back—using any assistive device they normally use. Completing the test in over 9 seconds is associated with driving impairment.

Vision

18. Visual acuity and continuous field of vision, both essential for safe driving, can be easily tested in the office[1] using the Snellen chart (with and without glasses) and confrontation for visual fields.

19. Patients who do not meet the requirements (Table 3) should be advised to cease driving until the condition has been evaluated and managed by an ophthalmologist or optometrist.[1]

Table 3. Visual Acuity and Field of Vision Requirements[1]

	Visual Acuity*	Visual Field*
Private drivers	Not less than 20/50 (6/15).	120° continuous along the horizontal meridian and 15° continuous above and below fixation.
Commercial drivers	Not less than 20/30 (6/9). The worse eye should not be less than 20/400 (6/120), although some jurisdictions require a higher visual acuity in the worse eye.	150° continuous along the horizontal meridian and 20° continuous above and below fixation.

* With both eyes open and examined together, with or without corrective lenses.

Hearing

20. There is no firm evidence that driver hearing loss is associated with an increased risk of motor vehicle crashes. In the case of severe hearing loss, however, patients may not hear vital roadside sounds such as emergency sirens, train horns and crossings. These patients should be advised to wear hearing assistive devices while driving. Proper functioning of these devices is important—malfunctioning devices can mask sounds the driver must hear.[1]

21. Private drivers are not subject to hearing standards. Standards for those driving a passenger-carrying bus, taxi, emergency response vehicle or transporting dangerous goods are:
    - Corrected hearing loss (in better ear) of no more than 40 dB averaged at 500, 1,000 and 2,000 Hz.
    - Corrected word recognition score of at least 50 to 60%.[1]

NEXT STEPS

22. Once the in-office assessment has been completed, it is important to "differentiate between conditions that are mild, controllable or reversible from those that are severe, uncontrollable or permanent."[5]
    a) Patients in the latter group must be reported to the MVLA (see Reporting) and advised to stop driving until a decision has been made.[5]

b) Patients may have conditions that can be managed to improve driving ability:
   - Taper or discontinue a risky medication. For some patients, however, the benefits of the medication may outweigh the benefits of driving.
   - Refer the patient for corrective eyewear or removal of cataracts.
   - Refer the patient to physical or occupational therapy for neuromuscular conditions or potentially reversible cognitive deficits.[5]

23. If a patient has mild dementia and is found to be fit to drive, a repeat assessment of driving safety every 6 to 12 months is recommended.[14]

24. If there is any uncertainty about a patient's fitness to drive after completing a medical assessment, refer the patient to an appropriate specialist for further medical evaluation or to a driver assessment centre. Additional functional testing typically involves on-road testing (conducted by occupational therapists or certified technicians), although some jurisdictions use off-road evaluations, such as driving simulators or a battery of tests. Assessments are usually limited to drivers of private cars, not commercial vehicles or motorcycles, although some specialized centres offer testing for those drivers.[1] (See Appendix 1 regarding CCMTA information.)

Reporting

25. All physicians have a statutory duty to report patients they believe to be unfit to drive to the relevant provincial or territorial MVLA. This duty may be mandatory or discretionary, depending on the jurisdiction.[1] In certain jurisdictions, other designated professionals (e.g., nurse practitioners, optometrists, occupational therapists and psychologists) also have a duty to report patients who have conditions that make them unfit to drive.
    a) In general, clinicians "should err on the side of reporting any potentially medically unfit driver." This is particularly essential in jurisdictions where mandatory reporting is required.[1]
    b) The provincial or territorial MVLA provides details on the process for reporting unfit drivers. The Canadian Medical Protective Association (CMPA) can also provide assistance in interpreting jurisdictional standards.[1]

26. After determining that a patient's fitness to drive may be compromised, a clinician should inform the patient that:
    - A report will be made to the MVLA.
    - The MVLA will review the medical information to determine whether they are medically fit to drive.
    - The MVLA has a process for appeal and reinstatement.[1]

27. Patients should be cautioned not to drive until the MVLA has made its final decision. It is important to document discussions of this topic in the patient's chart. Clinicians do not revoke a patient's driver's licence. The final decision on driving eligibility is made by the MVLA.[1]

28. Once a report has been made to the MVLA, a clinician has fully discharged their legal responsibility. If a clinician becomes aware that a patient whose privileges have been suspended is continuing to drive, there is no legal obligation to report the situation to any authority. There are ethical considerations, however, because an unfit driver may endanger other road users. There are no guidelines or legislation to provide specific guidance. Clinicians are advised **to contact the CMPA/professional protective association** for advice and to document their reasons for making a follow-up report or not.[1]

Driving Cessation

29. Involuntary driving cessation can be a challenging situation to navigate, particularly if patients are functionally incapable of driving safely but perceive themselves as competent to drive. Older adults who must stop driving are at risk for social isolation, sedentary lifestyle and declining function.[5,35] The risk of depression is a particular concern. A meta-analysis (5 studies) found that driving cessation almost doubled the risk of depressive symptoms in older adults—summary OR 1.91 (95% CI 1.61–2.27).[36]

30. It is important to have a frank but sensitive discussion with patients (either with or without their family/caregivers present).[1,14] Tips for discussing driving cessation are outlined in Box 1.

Box 1. Tips for Discussing Driving Cessation[1,14,37]

- Ask if family members/caregivers can be present to provide emotional support, and help to ensure that the family understands that the patient needs to stop driving. In some cases, it might be helpful to meet with the family (with the patient's consent) before holding a joint meeting.
- For patients with a progressive illness such as dementia, discuss the impact on driving early in the course of the condition before it becomes a problem. Early discussions also allow patients and family members to prepare for the day when driving is no longer possible.
- Be aware that patient and family/caregiver reports of driving competence often do not reflect actual competence. External evidence of impaired driving performance (e.g., record of motor vehicle crashes) can help inform a discussion of the risks of continuing to drive and emphasize the need to stop driving.
- If patients talk about a past good driving record, acknowledge that accomplishment but return the discussion to the need to stop driving. ***Talking Tip: "Medical conditions can make even the best drivers unsafe."***
- Allow the patient to express their feelings. Be firm but empathetic and try to avoid getting into an argument. Emphasize your responsibilities as a clinician—both ethical and legal.
- If necessary, help family/caregivers to explore ways to deter the patient from driving or giving up their car (e.g., gifting the car to a grandchild).
- Provide advice about alternative means of transportation including family/caregivers/friends, public transit, retirement community shuttles, volunteer drivers and hire options (such as taxis, Uber and Lyft), which can be much less expensive than owning and operating a vehicle.
- Ask patients what they understand from the discussion. A second appointment may be needed to provide further clarification and explore next steps. It can be helpful to provide a letter explaining the reasons for driving cessation so that patients can refer to it later if they forget.
- Be sure to document the date and content of the discussion.

31. To help patients who must stop driving to stay mobile, the CMA suggests creating a "mobility account" with the money that would have been used to own and operate their own vehicle. The purpose of the mobility account is to have funds set aside to cover the costs of alternative transportation.[1] The Driving Costs Calculator from the Canadian Automobile Association (CAA) can help patients calculate all the ongoing costs of owning a vehicle (see Appendix 1).

32. In some jurisdictions (e.g., BC, ON), people who retire from driving can exchange their driver's licence for an official identification (ID) card which is accepted as ID anywhere a driver's licence is accepted.[38]

KEY POINTS

- Assessment of driver fitness may be prompted by:
  - A patient presenting with a driver fitness form.
  - Concerns from family/caregivers regarding a patient's fitness to drive.
  - Hospitalizations or worsening of chronic conditions.
  - Alcohol or substance abuse.
  - Use of medications that can impair driving ability.
- Administering multiple cognitive tests can assist in identifying patients who may be unsafe to drive. A multi-test approach is preferred, as it avoids reliance on a single test to assess driver fitness.
- With the legalization of cannabis, screening for cannabis use in relation to safe driving is important. Practitioners will need to consult with their local authority and/or professional protective association to provide guidance on testing and reporting requirements.
- While practitioners have a duty to report patients who they believe to be unfit to drive, they do not have a legal obligation to report patients who continue to drive while suspended. Consulting their professional protective association is advised to address ethical concerns.
- Initiating an early discussion with patients with health conditions that will impact their future ability to drive can assist the patient and their family/caregivers to develop an alternate transportation plan.

CASE COMMENTARIES

Case 1: Ravi, male, age 66

What further information would you require to ascertain Ravi's capacity to drive?

It would be important to:

- Query collateral history—ask Ravi's wife (ideally on her own) what she thinks of Ravi's driving, and if he's had any recent tickets or mishaps (Table 1).
- Ascertain if Ravi has any problems with his vision (Info points 18, 19; Tables 1, 3) or drug/alcohol use (Info points 12–14; Table 1).
- Assess his cognitive function (Table 1) using a multi-test approach with the MMSE, MoCA and Trail Making Tests A and B (Info points 8–11; Table 2; Appendix 2).
- Assess impact of cognitive impairment on functional capacity—enquire about any deficits in ADLs/iADLs.
- Screen for depression (Table 1).
- Order focused laboratory tests to rule out potentially reversible medical causes contributing to cognitive impairment such as hyperglycemia, vitamin B_{12} deficiency and hypothyroidism (Info point 7).

If, at any time, you are concerned and uncertain about Ravi's functional capabilities, it would likely be best to refer him to an approved driving assessment centre for a more comprehensive evaluation (contact your provincial/territorial office for information). Contact details can be found in the CCMTA's *Determining Driver Fitness in Canada*—see link in Appendix 1). Cost may be a barrier for Ravi.

REVIEWER TIP
A diagnosis in itself is often inadequate to determine the person's ability to safely drive a motor vehicle. It is essential to assess the functional impact of chronic, persisting conditions such as impaired cognition. If Ravi has functional impairment in 1 basic ADL or 2 iADLs due to cognitive decline, he might have moderate stage dementia (see Appendix 2), and he should be offered an on-road driving assessment and likely reported to transportation authorities. Highly intelligent persons can score high on a MoCA and still have dementia; conversely, there are some types of dementia (e.g., frontotemporal dementia) where scores remain high for a while, but the patient has considerable functional impairment.

Part Two

How would you approach Ravi's capacity to drive?

It would be important to explain to Ravi and his wife that the scores of his screening tests demonstrate mild cognitive impairment. However, based on the history, it appears that it has had relatively little impact on his general functioning at the present time. They should be cautioned that, while most patients who have a mild impairment can still drive, Ravi may need to stop driving if his cognition worsens (Info point 9). They should monitor his overall functioning, including any changes in his driving, and report any concerns (Info point 11).

To assist in this, you could recommend regular follow-up appointments to monitor his cognitive impairment and review if there has been any impact on his functioning. Given the low vitamin B_{12} results, he should be advised to start oral B_{12} supplements.

In the future, if Ravi demonstrates any abrupt or fluctuating change, the situation would warrant screening for reversible causes such as sleep apnea and depression, or other new treatable medical conditions (Table 1).

Part Three—Eighteen months later

How would you address his daughter's concerns?

You should get detailed information regarding Ravi's memory and impact on functioning that has led his daughter to be concerned. You could encourage the family to come in together for a follow-up appointment (Appendix 2). It would be important to have a discussion about the impact on the family if her father cannot drive and what transportation options would be available to support her parents (Box 1).

Part Four—Three weeks later

How would you approach this situation?

You might respond by saying: "Medical conditions can make even the best drivers unsafe" (Box 1).

It is clear that Ravi needs to be reported (Info points 9, 25; Appendix 2). You should inform Ravi of your legal requirement to report your concerns to the MVLA (Info point 26) and the need for him to stop driving immediately (Info point 27). If Ravi or his family want to challenge this action, the MVLA has an appeal process (Info point 26).

It would be important to discuss arrangements for alternate forms of transportation (see Box 1) and to arrange further investigations such as a head CT or MRI if not already completed and/or referral. For further details on the assessment of dementia, see the PBSG module Dementia (August 2018) available at https://members.fmpe.org/.

If Ravi is concerned about not being able to use his driver's licence as photo ID, he may be able to exchange it for an official identification card from the provincial/territorial government (Info point 32).

Case 2: Diego, male, age 60

What further information would you require at this time?

It would be helpful to ascertain:
- If Diego has had any vehicular collisions or near misses (Table 1).
- Any history of falls, balance issues or loss of consciousness (Table 1; Info point 15).
- Any changes in his memory or driving habits (Table 1).
- If he wears his glasses while driving and the rationale for not wearing his hearing aids (Table 1).
- The amount of pain he is experiencing, his pattern of oxycodone use and any side effects (Info point 12).
- His use of alcohol or other substances (Info points 13, 14).

A physical exam would assess his visual acuity (Info points 18, 19; Tables 1, 3), and musculoskeletal and neurologic status (Info points 16, 17; Table 1).

Part Two

What would be your plan of care for Diego?

Diego should be informed that a completed commercial licence form will be submitted, recommending that he should not drive a school bus until further assessment (Info points 26, 27). He should be seen by an optometrist/ophthalmologist as his current vision does not meet the standard for his commercial licence (not less than 20/30), although it does meet the standard for a private licence (not less than 20/50) (Table 3).

He should also book an appointment with an audiologist/hearing aid specialist to reassess his hearing and ensure that he has functional hearing aids (Info point 20). As Diego is a school bus driver, he requires a corrected hearing loss of no more than 40 dB averaged at 500, 1,000 and 2,000 Hz, and a corrected word recognition score of at least 50 to 60% (Info point 21).

Diego's range of motion deficits do not necessarily require that he stop driving, but he may require accommodations such as panoramic mirrors (Info point 16b).

Diego would be a candidate for driver rehabilitation in-office and on-road testing (Info point 24) but the cost may be prohibitive for him, depending on your jurisdiction.

Case 3: Ethan, male, age 31

What would be your next steps?

There are provincial/territorial variations regarding the reporting of a patient like Ethan (Info point 25). Depending on your jurisdiction, you could consider reporting him due to his use of cannabis and driving (Info point 14). It would be important to inform him that he should wait at least 5 hours after inhaling cannabis before driving (Info point 14c). He should be aware of the current driving penalties in your jurisdiction if he continues to drive under influence of cannabis (Info point 14d). You could also discuss with him that cannabis can worsen, not ameliorate, anxiety.

Part Two—Two months later

What would be your obligation, knowing that Ethan is still driving while high?

Once reported, you do not have a legal obligation to report Ethan again, although it would be important to reiterate that he should wait at least 5 hours after inhaling cannabis to ensure he is able to drive safely (Info point 14c). However, because he could endanger other road users while driving high, it would be prudent to contact the CMPA/professional protective association for advice, and to document your reasons for making a follow-up report or not (Info point 28).

We always welcome your input. If you would like to provide feedback on this module, the following link will take you to an electronic survey: **http://members.fmpe.org/modulefeedback**

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The Foundation's module team would like to acknowledge the assistance of Jeyla Chen (North York, Ontario), Kate Foulds (Squamish, British Columbia) and David Ross (Sherwood Park, Alberta) for their participation in the initial roundtable discussion. We also wish to thank the Practice Based Small Groups facilitated by Beatriz Sainz (Fredericton, New Brunswick) and Joe Wiatrowski (Winnipeg, Manitoba) who pilot tested this educational module and provided suggestions for improvement.

Disclosures of competing interests:

No competing interests were declared for Joanne Opsteen, David Hogan, Linda Lee, Frank Molnar, Kathleen Lafferty or Lynda Cranston.

While every care has been taken in compiling the information contained in this module, the Program cannot guarantee its applicability in specific clinical situations or with individual patients. Physicians and others should exercise their own independent judgment concerning patient care and treatment, based on the special circumstances of each case.

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Web-based resources cited within the module were active as of February 2021.

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LEVELS OF EVIDENCE

Evidence Level	Type of Evidence Included
High Study conclusions are unlikely to be strongly affected by information from future studies.	• Systematic reviews/meta-analyses that include a wide range of well-designed studies (few limitations/risk of bias, directly applicable to target population, summary estimate has a narrow confidence interval). • Large, well-designed, multi-centre RCTs.
Moderate Study conclusions might be affected by additional information from future studies.	• Systematic reviews/meta-analyses of studies with more limitations/risk of bias (less well-designed RCTs, cohort, case-control studies; summary estimate has a wide confidence interval). • Single, moderate-sized well-designed RCTs. • Well-designed, consistent, controlled but not randomized trials. • Large cohort studies.
Low Study conclusions could likely be affected by additional information from future studies.	• Small RCTs with a high risk of bias. • Controlled or cohort studies with significant limitations/risk of bias, significant variation between study results, or not directly applicable to target population.
Very Low Evidence from appropriately sized studies in representative populations is lacking or insufficient.	• Individual case reports or series. • One or more studies with very severe limitations/risk of bias.

In addition to the categorization above, when the body of evidence on a specific issue is limited, we may cite expert opinion as the highest evidence level (if available).

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APPENDIX 1. Online Resources

FOR CLINICIANS

Canadian Council of Motor Transport Administrators (CCMTA)
Determining Driver Fitness in Canada
https://ccmta.ca/images/pdf-documents-english/dv/NSC_6/National-Safety-Code-Standard-6--Determining-Fitness-to-Drive-in-Canada--January-2020.pdf
Provincial/Territorial contact information for reporting potentially unfit drivers is included on pages 282–285. Driver assessment centres and rehabilitation resources can also be located in your area by contacting these offices.

Canadian Medical Association
Driver's Guide: Determining Medical Fitness To Operate Motor Vehicles
https://joulecma.ca/evidence/CMA-drivers-guide
CMA members can download a pdf copy for free; non-members can purchase it for $19.95.

Byszewski A, Aminzadeh F, Khoury L. "I want my driver's licence back!" ***CGS: Journal of CME*****. 2012;2(3):15-19**
https://canadiangeriatrics.ca/2013/01/volume-2-issue-3-i-want-my-drivers-licence-back/
An article exploring strategies to disclose driving cessation in the context of dementia.

Non-Medical Cannabis Resource—The Centre for Effective Practice
https://cep.health/clinical-products/non-medical-cannabis-resource/
A resource designed to help primary care providers discuss non-medical cannabis with their adult (19+) patients, including education on the harms/benefits of cannabis and general harm reduction.

FOR PATIENTS

CAA's Toolkit for Seniors and their Loved Ones
https://www.caa.ca/seniors/
CAA's Seniors Driving website contains resources and information on renewing a driver's licence, assessing driving skills, the impact of aging on driving, maintaining driving skills, adjusting driving habits, medications and driving, and more.

CAA's Driving Costs Calculator
https://carcosts.caa.ca/
This tool can help patients calculate all the ongoing costs of owning a vehicle.

Facts about Drug-Impaired Driving
https://www.ccsa.ca/facts-about-drug-impaired-driving
Statistics on drug-impaired driving and its consequences.

Healthy Aging: Is it Time to Stop Driving?
https://www.healthlinkbc.ca/health-topics/zx3961
Information to help older drivers understand their choices so they can discuss them with their doctor.

Driving and Dementia Toolkit for Patients and Caregivers
https://www.rgpeo.com/wp-content/uploads/2020/04/d-d-toolkit-pt-crgvr-eng-with-hyperlinks.pdf
A resource for patients in the early stages of dementia (who can still drive safely) and their family, friends and other support persons.

APPENDIX 2. Dementia and Driving Assessment

Note: This assessment provides a focused approach for patients with dementia, recognizing that safe driving depends on the ability to coordinate many complex functions including, but not limited to, perception and cognitive abilities (e.g., executive function and multi-tasking). Other essential items to assess (e.g., medications, musculoskeletal issues) are covered in the Information Section.

ASSESSMENT	DETAILS
Dementia Type and Risks for Driving	• Alzheimer's dementia: predictable cognitive decline, with steep, less predictable decline in driving ability. • Vascular dementia: abrupt periods of worsening associated with ↑ cerebrovascular lesions. • Parkinson's dementia, Lewy body dementia: motor, executive and visuospatial dysfunction. • Frontotemporal dementia: early executive dysfunction and behavioural changes.
Impact on Function	• Mild dementia: still able to carry out ADLs (dressing, eating, ambulation, toileting, hygiene) but has difficulty with complex tasks or instrumental ADLs (iADLs)—shopping/social function, housework/hobbies, accounting (e.g., banking, bills), telephone/tools/transportation, medication management. • Moderate dementia: loss of 1 or more basic ADLs or loss of 2 or more iADLs. • Severe dementia: decreased ability to use toilet, incontinence, limited vocabulary, loss of ability to walk and sit, inability to smile. **Note:** Moderate or severe dementia are contraindications to driving.

Opinion of Family/ Caregivers	• Question family/caregivers (separately from patient):
	  ○ Do you feel safe/unsafe when they drive?
	  ○ Would you feel safe if a young family member was in the car alone with them?
	• Concerns about driving safety from a family member are grounds to consider the patient unsafe. However, family members/caregivers may be unaware of how an illness can impact driving, may be protecting the patient, or may have their own reasons for wanting the person to continue driving (e.g., not wanting the responsibility of driving).

Patient Insight/ Judgment	• Ask the patient:
	  ○ What would you do if you saw a ball roll out on the street in front of you while driving?
	  ○ Do you think you may need to stop driving at some point because of your dementia diagnosis?

Visuospatial Issues	• Intersecting pentagons, clock-drawing test. **Note:** Significantly abnormal results indicate driver is unsafe.
COGNITIVE TEST	**SCORES SUGGESTING RISK FOR UNSAFE DRIVING**
Mini-Mental State Exam (MMSE)	• Cut-off score ≤ 25. • 20–25: mild cognitive impairment; 10–19: moderate; 0–9: severe (score range: 0–30). **Note**: Visual attention, spatial orientation and executive function skills (all vital to driving) are not properly assessed by this tool.
Montreal Cognitive Assessment (MoCA)	• Cut-off score ≤ 18. • 18–25: associated with mild cognitive impairment; 10–17: associated with moderate cognitive impairment; < 10 associated with severe cognitive impairment (score range: 0–30). **Note**: Correcting MoCA score for education: If the patient has ≤ 12 years of education, add a point to the total score. The number of years of education does not refer to an educational level, but the number of years of education starting after kindergarten (do not include kindergarten in the count). The maximum score is 30—if a patient scores 30/30, do not add a point for ≤ 12 years of education.
Trail Making Tests: Part A and Part B	• Part A: Unsafe: ≥ 2 minutes or ≥ 2 errors. • Part B: Unsafe: ≥ 3 minutes or ≥ 3 errors ("3 or 3" Rule). Unsure: 2–3 minutes or 2 errors. Consider how patient performs the test—e.g., slowly, with hesitation, anxiously, impulsive or perseverative (repetition of a particular response) behaviour, making multiple corrections, forgetting instructions, unable to understand test.

Assessment and Next Steps:

Safe: reassess in 6–12 months, or sooner if indicated. *Unsafe*: report to MVLA. *Unsure*: if driving is the only issue, refer to specialized on-road testing; if there are driving and other dementia-related issues, refer to specialized dementia assessment services.

Sources: 1) Dalziel W. *10 Minute Office-based Dementia and Driving Checklist. Driving and Dementia Toolkit (for health professionals).* 3rd ed. The Champlain Dementia Network, Regional Geriatric Program of Eastern Ontario; 2009. www.rgpeo.com; **2)** Canadian Medical Association. *Driver's Guide: Determining Medical Fitness To Operate Motor Vehicles.* 2019.; **3)** Frank CC, Lee L, Molnar F. Driving assessment for people with dementia. *Can Fam Physician.* 2018;64(10):744.; **4)** Lee L, Molnar F. Driving and dementia: efficient approach to driving concerns in family practice. *Can Fam Physician.* 2017;63(1):27-31.; **5)** Piersma D, Fuermaier ABM, de Waard D, et al. The MMSE should not be the sole indicator of fitness to drive in mild Alzheimer's dementia. *Acta neurologica Belgica.* Dec 2018;118(4):637-642.; **6)** Morgan E. Driving dilemmas: a guide to driving assessment in primary care. *Clin Geriatr Med.* Feb 2018;34(1):107-115. **7)** Roy, M., & Molnar, F. Systematic review of the evidence for Trails B cut-off scores in assessing fitness-to-drive. *Canadian Geriatrics Journal* 2018;16(3), 120-142.; **8)** Canadian Council of Motor Transport Administrators (CCMTA). *Determining Driver Fitness in Canada.* 2020.