

Dementia

Alert

- Cognitive screening alone cannot be used to determine fitness to drive, except when valid test scores are in the severely impaired range.
- If a patient's fitness to drive is unclear, the physician should recommend further assessment.

8.1 Overview

Current demographic trends predict major increases in the number of older drivers over the next 20 years. Given that the prevalence of dementia increases with age, this trend implies that the number of older drivers with dementia will also increase significantly. Physicians need to be aware of possible cognitive compromises of fitness to drive.

The term “dementia” encompasses a group of diseases (i.e., different types of dementia) that may have different effects on the functional skills required for safe driving. It is known that patients with Alzheimer’s dementia show a predictable decline in cognition, with the decline in driving abilities over time being steep but less predictable (Duchek et al., 2003). However, to date, no longitudinal studies of declines in driving ability have been conducted for other forms of dementia. Nonetheless, certain characteristics of these dementias may have implications for fitness to drive. For example, vascular dementia can present with abrupt periods of worsening associated with the accumulation of cerebrovascular lesions. Parkinson’s dementia and Lewy body dementia are often associated with motor, executive and visuospatial dysfunction, any of which can be hazardous on the road. Furthermore, some frontotemporal dementias are associated with early executive dysfunction and behavioural changes (e.g., anger control issues) that may render driving hazardous. Finally, all people with dementia are more prone to delirium, with unpredictable and sudden cognitive decline. Ultimately, then, progression to unsafe driving status is unpredictable for patients with dementia. Literature reviews have shown great variability in whether there is an increased risk of collision among those with dementia, but have consistently shown an increased risk of decline in driving skills and of failure in on-road driving tests, even at mild stages of dementia (Man-Son-Hing et al., 2007; Chee et al., 2017).

8.2 Earlier Canadian dementia guidelines

The Third Canadian Consensus Conference on Dementia (CCCD3; Hogan et al., 2007, 2008) set out the following recommendations on fitness to drive for patients with dementia:

- Diagnosis of dementia is not sufficient to withdraw driving privileges.

- Moderate to severe dementia is a contraindication to driving.
- Driving is contraindicated in people who, for cognitive reasons, have an inability to independently perform multiple instrumental activities of daily living or any of the basic activities of daily living. This degree of functional impairment describes a moderate or worse stage of dementia.
- People with mild dementia should receive comprehensive off- and on-road testing at specialized driving centres.
- No test, including the MMSE (Mini-Mental State Examination), has sufficient sensitivity or specificity to be used as a single determinant of driving ability. However, abnormalities on tests, including the MMSE, clock drawing test and Trails B test, should trigger further in-depth testing of driving ability.
- Patients with mild dementia who are deemed fit to continue driving should be re-evaluated every 6 to 12 months, or sooner if indicated.

Note: These recommendations were rated by the CCCD3 at Grade B, Level 3: Fair evidence to support this manoeuvre. Opinions of respected authorities based on clinical experience, descriptive studies or reports of expert committees.

8.3 Updated guideline recommendations

For this updated chapter on dementia in the CMA Driver’s Guide (edition 9.1), we followed the framework of the Guidelines International Network (Schünemann et al., 2014) and the ADAPTE process for updating clinical practice guidelines (<https://www.g-i-n.net/document-store/working-groups-documents/adaptation/adapte-resource-toolkit-guideline-adaptation-2-0.pdf>). We assembled an international knowledge synthesis and guideline update team, which included researchers from Canada, Australia, Belgium, Ireland, England and the United States. The recommendations in Table 2 are based on this rigorous evidence-informed process (Rapoport et al., 2018).

8.4 Reporting according to stage of dementia

To date, there are no published guidelines as to when patients with mild dementia should be reported in jurisdictions with mandatory physician reporting (Table 1 in section 3 of this guide). However, it is clear, given the guidelines listed in section 8.2, that those with moderate to severe dementia should be reported.

The determination of whether a patient has crossed the threshold from mild to moderate dementia is challenging. As a basic guideline, the CCCD3 defined moderate dementia as the loss of 1 or more basic activities of daily living (ADLs) or the loss of 2 or more instrumental activities of daily living (IADLs, including medication management, banking, shopping, use of the telephone or cooking) because of cognitive problems.

Another means of defining stages of dementia is the CDR Dementia Staging Instrument (<https://knightadrc.wustl.edu/cdr/cdr.htm>). A score of 2 (moderate dementia) or 3 (severe dementia) on this scale would preclude driving. Unfortunately, this rating scale is of limited clinical utility because it requires training and is rarely used in general clinical practice.

A general rule of thumb is that any physician 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 licensing authority.

8.5 Cognitive screening tools

Many in-office cognitive screening tools have been proposed to predict which patients are most likely to have problems with driving. For the most part, these tools have been developed to screen for cognitive impairment or dementia, rather than to identify unsafe drivers. Furthermore, none has yet consistently shown reliable cutoffs beyond which patients' driving becomes unsafe.

The most studied office-based screening tool for potential concerns about fitness to drive is the Trail Making Test part B (Trails B), which has a recommended 3-minute or 3-error cutoff, also known as the "3 or 3 rule" (Roy and Molnar, 2013). Emerging evidence may point to shorter time cutoffs, but it is too early to make any such change, given the limited evidence that is currently available.

Some screening tests are claimed to have been designed to determine fitness to drive, but these tests have not been demonstrated to have a predictive value that permits licensing decisions based solely on their results. As outlined in recommendation 6a in Table 2, no single test currently available has sufficient sensitivity or specificity to accurately predict, in the medical office setting, a person's driving safety *in all situations*, but certain tests may be helpful in some situations. If cognition is impaired severely enough (i.e., test results are so poor that test sensitivity is not a concern), the results may be specific enough (i.e., unlikely to represent false results) to justify reporting the findings to the ministry of transportation as being of concern and meriting licensing review. With the exception of such clear situations, the consequences of misclassifying a safe driver as unsafe or an unsafe driver as safe solely on the basis of current cognitive screening tests can be substantial, both for safe drivers who are inappropriately deprived of independent mobility and for unsafe drivers who continue driving and thereby place themselves and others at risk.

It is recommended that physicians administer more than 1 cognitive screening tool. If the results of cognitive tests such as the MMSE, the Montreal Cognitive Assessment (MoCA®; www.mocatest.org), the clock-drawing test, the Trail Making Test or other in-office tests are markedly abnormal (i.e., where the results are concerning, specific and believable), consideration should be given to whether the patient has moderate or severe dementia, taking into account the person's medical history and recalling that moderate or severe dementia is a contraindication to driving.

It is important that screening tools not be misused. To optimize the use of current screening tools, despite the limitations of the evidence described above, an article by Molnar et al. (2012; <http://canadiangeriatrics.ca/wp-content/uploads/2016/12/Dementia-and-Driving-Maximizing-the-Utility-of-In-Office-Screening-and-Assessment-Tools.pdf>) suggests applying the following considerations when using in-office screening tests:

- **Determine whether the test result is consistent with other evidence** — Are the results of the test consistent with the history provided by the patient, caregiver and family and with the results of other tests? Conversely, is the result of this single test an outlier and possibly not reflective of the patient’s true functional ability?
- **Make certain you know what you are really measuring** — Ensure that low scores are not due to confounding variables, such as a language barrier, low education, dyslexia, performance anxiety, depression or sensory deficits.
- **Consider the trajectory of the patient’s condition** — Consider whether the patient’s function is expected to improve (e.g., delirium, recent head injury, recent stroke), remain stable (e.g., stable head injury, stable stroke) or decline (e.g., progressive degenerative disorders such as dementia, Parkinson’s disease).
- **Understand your role** — Even in jurisdictions where reporting is mandatory, the role of physicians is not to directly determine fitness to drive, but rather to report clinical findings that raise concerns regarding fitness to drive. The licensing authorities then decide whether the patient is fit to drive or needs more testing on the basis, in part, of accurate, fair and timely information from physicians.
- **Use common sense and consider the severity of the findings** — Examine the entire picture, including any physical and behavioural limitations. Sometimes it is obvious that a patient is not safe to drive, given low valid test scores, dangerous behaviours, significant physical limitations or significant functional impairment. Do not be afraid to make a judgment based on any obvious impairments that may be uncovered.
- **Examine qualitative and dynamic aspects of the testing** — When interpreting performance on a test, do not focus solely on the score but also consider qualitative dynamic information regarding how the patient performed the test, such as slowness, hesitation, anxiety or panic attacks, impulsive or perseverative behaviour, lack of focus, multiple corrections, forgetting instructions or inability to understand the test. These may indicate other sources of impairment that may negatively influence driving safety.

To help make a decision, the physician should ask the following 2 questions after reviewing the results of cognitive tests, the findings of a physical examination and the person’s driving history:

Given the results of my clinical assessment,

- would I let a loved one get into a car that this patient is driving?
- would I want to have a loved one cross the street in front of a car that this patient is driving?

For each question, 3 answers are possible: “yes” (meaning there are no concerns that would trigger further testing), “uncertain” (meaning that more tests are needed) and “absolutely not” (meaning that the risk is clear and too high, and hence that the physician’s assessment of the patient should be forwarded to the ministry of transportation and the patient advised not to drive unless authorized by the ministry of transportation).

Test results do not stand alone but should be considered in the context of more detailed approaches, such as those described in the following resources:

1. An article in the November 2010 issue of *Canadian Family Physician* (Molnar and Simpson, 2010; www.cfp.ca/content/56/11/1123.full.pdf+html).
2. An article about driving and dementia toolkits in the *Canadian Geriatrics Society Journal of CME* (Byszewski, Molnar et al., 2012; <http://canadiangeriatrics.ca/wp-content/uploads/2016/11/Diving-and-Dementia-Toolkits.pdf>).
3. *The Driving and Dementia Toolkit for Health Professionals*, developed by the Champlain Dementia Network and the Regional Geriatric Program of Eastern Ontario (www.rgpeo.com/en/health-care-practitioners/resources/driving.aspx).

8.6 When fitness to drive remains unclear

Some provinces, specifically Quebec, Saskatchewan and British Columbia, offer ministry-funded on-road testing for drivers with potentially compromised driver fitness, including those with cognitive problems.

Other provinces do not provide ministry funding for on-road testing. In these latter provinces, the patient is required to pay for the comprehensive on-road test (at a cost of up to \$800), which is performed by a ministry-approved private company and is generally conducted by an occupational therapist.

Physicians should inform themselves about the particular arrangement in their respective jurisdictions and should inform patients and their families that repeat testing may be required every 6 to 12 months even if the person with dementia passes the initial test.

8.7 Counselling patients with dementia who can still drive safely

When assisting a patient with dementia to plan for future driving cessation, physicians can consider providing the patient and family with a copy of the *Driving and Dementia Toolkit for Patients and Caregivers* (www.rgpeo.com/media/30422/d%20%20d%20toolkit%20pt%20crgvr%20eng%20with%20hyperlinks.pdf). The patient's fitness to drive should be reassessed every 6 to 12 months, or more frequently if the cognitive impairment progresses (as per recommendation 7 in Table 2). For further information on driving cessation, see section 4 of this guide.

8.8 Disclosure of unfitness to drive

When a patient is found to be unfit to continue driving, the discussion between the physician and the patient is a delicate one, since a poorly chosen word may upset and traumatize the person, when the intention is to help the person move through a difficult stage in life in a compassionate and supportive manner. Guidance regarding how best to approach this challenging dialogue can be found in a case-based article (Byszewski, Aminzadeh et al. 2012; <http://canadiangeriatrics.ca/wp-content/uploads/2016/11/Disclosing-Driving-Cessation-in-the-Context-of-Dementia.pdf>).

8.9 Follow-up after loss of licensure

Loss of a driver’s licence has been associated with social isolation and depression. Therefore, after a person with dementia has had his or her licence revoked, the physician should monitor for these problems in the course of scheduled follow-up. It is also important to enlist family members and obtain their help in creating a transportation plan for the patient that allows access not only to required appointments (e.g., medical, banking) but also to the social activities that are needed to maintain quality of life.

8.10 Countermeasures

There are few data to support the safety of restricted licensing, co-piloting or other countermeasures for persons with dementia (Iverson et al., 2010).

#	Recommendation	Class of Evidence	Agreement†
1	Dementia often has a direct effect upon fitness to drive, and clinicians should address cognitive compromises that may impact fitness to drive.	C	96.6%
2	Diagnosis of dementia alone is not sufficient to withdraw driving privileges.	A	93.8%
3	Severe dementia is an absolute contraindication to driving.	C	96.6%
4	It is unlikely that safe driving can be maintained in the presence of moderate dementia (e.g., the additional presence of basic ADL impairments) and is to be strongly discouraged. If the patient desires to drive, they should be formally assessed and monitored very carefully.	B	92.4%
5a	People with dementia with progressive loss of 2 or more IADLs due to cognition (but no basic ADL loss) are at higher risk of driving impairment.	A	95.2%
	5b A formal assessment and ongoing monitoring of fitness to drive is recommended in this situation if the patient wishes to continue driving.	B	93.8%

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6a	No in-office test or battery of tests including global cognitive screens (e.g., MMSE, MoCA) has sufficient sensitivity or specificity to be used as a sole determinant of driving ability <i>in all cases</i> .	A	97.2%
	6b However, abnormalities on these tests may indicate a driver at risk who is in need of further assessment.	B	95.9%
	6c Substantially impaired scores, which are typically associated with moderate to severe dementia, may preclude safe driving.	C	84.1%
	6d If concerns or uncertainty still exist, a specialist opinion should be sought.	C	81.4%
7	Patients with dementia who are deemed fit to continue driving should be re-evaluated every 6 to 12 months or sooner, if indicated.	B	93.1%
8a	Any clinician who has concerns but is uncertain whether a patient's cognitive problems may adversely affect driving, should refer the patient for a functional driving assessment, either through an occupational therapy evaluation or directly to the licensing authority.	C	85.5%
	8b If there are clear aspects of the history, physical examination and cognitive examination that place the patient and public at high risk for crash or impairment, the patient and informant/caregiver should be advised not to drive, and this conversation (including date and participants) should be documented in the clinical record.	C	96.6%
	8c Clinicians should be aware of the legal reporting requirements in their jurisdiction, mindful of their professional ethical imperatives, and strive to ensure that mechanisms to remove unsafe drivers from the road are sensitive, timely and effective.	C	85.5%
9a	Caregivers are able to predict driving safety more accurately than can the patients themselves, although in some circumstances, the caregivers may have a vested interest in preserving the patient's autonomy beyond a safe window ...	C	82.1%
	9b... Hence, caregiver concern about driving impairment should be taken seriously ...	B	96.6%

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	9c... and the possibility of a conflict of interest in preserving driving autonomy must be taken into consideration if such caregiver concern is absent.	C	92.4%
10	Medical comorbidities, physical frailty and the use of multiple medications are also factors that must be taken into consideration when assessing fitness to drive.	C	93.1%
11	We recommend a formal evaluation if behavioural disturbances (e.g., agitation, personality change, psychosis) are concerning for interfering with safe driving.	C	85.5%
12	Patients with prominent language impairment, e.g., primary progressive aphasia or other aphasia in the context of dementia, cannot be adequately screened with typical language-based tests and require a specialized assessment possibly from a speech therapist or neuropsychologist, functional assessment (IADLs, ADLs) and/or a formal driving assessment.	C	84.1%
13	As with many disabling progressive diseases that lead to driving cessation, conversation regarding eventual retirement from driving should be held as early as possible.	C	89.0%
14a	Driving cessation has been associated with social isolation, depression and other adverse health outcomes.	C	90.3%
	14b Therefore, after a person with dementia has stopped driving, it is important to monitor for these problems longitudinally.	C	87.6%

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†Agreement refers to the percentage of the 145 participants in the consensus process who agreed with each recommendation.

Note: ADLs = activities of daily living, IADLs = instrumental activities of daily living, MMSE = Mini-Mental State Examination, MoCA = Montreal Cognitive Assessment.