



BRIEF ANSWERS  
TO SPECIFIC  
CLINICAL  
QUESTIONS

## 1-MINUTE CONSULT

### Q: When should I discuss driving with my older patients?

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**A:** Most older drivers are safe drivers and are less likely than younger people to drive recklessly, at high speeds, or under the influence of alcohol.<sup>1</sup> However, motor vehicle injuries are the second leading cause of injury-related deaths among older adults. Very old adults (80 years and over) have higher rates of fatality and injury in motor vehicle crashes per million miles driven than any other age group except for teenagers.<sup>1</sup> Therefore, consider safety screening of all very old drivers plus any older adult with certain high-risk medical conditions, including the following.

#### ■ NEUROCOGNITIVE DISORDERS

Drivers with Alzheimer disease—the most common type of major neurocognitive disorder (dementia) in older adults in the United States—are at high risk for adverse driving events due to impaired memory, attentiveness, problem-solving skills, multitasking, orientation, judgment, and reaction speed. Even in amnesic mild cognitive impairment—a mild neurocognitive disorder without functional decline—driving skills such as lane control may be impaired.<sup>2</sup>

Frontotemporal dementia, a less common cause of dementia in older adults, is associated with profound impairments in reasoning, task

flexibility, planning, and execution. Persons with frontotemporal dementia are more likely to speed, run stop signs, and suffer more off-road crashes and collisions.<sup>3</sup>

The diagnosis of dementia, however, is less predictive of driving risk than the stage of dementia. The American Academy of Neurology recommends that health care providers clinically “stage” all demented individuals using a validated tool at diagnosis and periodically afterwards. The Clinical Dementia Rating (CDR) scale is appropriate for staging dementia in the office. The CDR has also been shown to identify people with dementia who are at an increased risk of unsafe driving, with strong evidence (level of evidence A) relating dementia stage to driving risk.<sup>4</sup> The CDR assigns a score of 1 for mild dementia (function impaired in at least one complex activity); 2 for moderate dementia (function impaired in at least one basic activity); and 3 for severe dementia. Individuals with a CDR score of 2 or higher are considered to be at very high risk if still driving. These persons should be encouraged to surrender their driving privileges.<sup>4</sup> Even with mild dementia (CDR score of 1), as few as 41% of drivers may drive safely.<sup>4</sup> Most persons with mild cognitive impairment (CDR score of 0.5) are safe drivers.

Patients often have poor insight into their driving safety. However, a caregiver's rating of driving skills as marginal or unsafe is useful in identifying unsafe drivers (level of evidence B) and can be considered a red flag.<sup>4</sup> Predictors with less support in the literature (level of evidence C) include recent traffic citations, motor vehicle accidents, and self-reported situational avoidance, such as limiting driving to familiar roadways. Additional predictors include Mini-Mental State Examination scores of 24 or less, and/or the emergence of

Discuss driving safety with any patient age 80 or older or one with specific conditions

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TABLE 1  
Levels of evidence for predictive characteristics of unsafe drivers

Level of evidence	Characteristic
A (predictive)	Clinical Dementia Rating score
B (probably predictive)	Caregiver's rating of driving ability as marginal or unsafe
C (possibly predictive)	History of traffic citations or crashes Reduced driving mileage Self-reported situational avoidance Mini-Mental State Examination score $\leq 24$ Aggressive or impulsive personality

BASED ON INFORMATION IN IVERSON DJ, GRONSETH GS, REGER MA, CLASSEN S, DUBINSKY RM, RIZZO M; QUALITY STANDARDS SUBCOMMITTEE OF THE AMERICAN ACADEMY OF NEUROLOGY. PRACTICE PARAMETER UPDATE: EVALUATION AND MANAGEMENT OF DRIVING RISK IN DEMENTIA: REPORT OF THE QUALITY STANDARDS SUBCOMMITTEE OF THE AMERICAN ACADEMY OF NEUROLOGY. NEUROLOGY 2010; 74:1316–1324.

an aggressive or impulsive personality (TABLE 1). A driver evaluation is helpful when there is mild cognitive impairment or mild dementia with at least one red flag.

Clinicians who are not comfortable with staging dementia as mild, moderate, or severe may consider referring to a neurologist or geriatrician.

There is no evidence to support or refute the benefit of interventional strategies such as driver rehabilitation for drivers with dementia.

PARKINSON DISEASE

Individuals with mild motor disability from Parkinson disease may be fit drivers. As the disease progresses, drivers with Parkinson disease may make more errors than healthy elders in visual scanning, signaling, vehicle positioning, and velocity regulation (eg, traveling so slowly that it may be unsafe).<sup>5</sup> Clinicians can consider referring a patient with Parkinson disease for a baseline driving evaluation upon diagnosis, and then every 1 to 2 years for reassessment. Alternate transportation should be arranged as the disease progresses.

EPISODIC INCAPACITATION

Approximately 1% to 3% of all motor vehicle accidents are due to sudden incapacitation of an otherwise safe driver.

**Syncope.** Neurally mediated (vasovagal)

syncope accounts for 30% to 35% of syncopal episodes while driving.<sup>6</sup> Cardiac arrhythmias are the next most common cause and include bradyarrhythmias (7%), supraventricular tachyarrhythmias (2%–15%), and ventricular tachyarrhythmias (5%–17%). Because neurocardiogenic syncope often recurs, consider restricting driving for those with recurrent or severe neurocardiogenic syncopal episodes until symptoms are controlled.

**Arrhythmias.** Driving recommendations for various arrhythmias<sup>7,8</sup> are listed in TABLE 2.

Many patients who have an implantable cardioverter-defibrillator (ICD) device experience an unexpected shock. For individuals with a history of ventricular tachycardia or fibrillation, the 5-year actuarial incidence of appropriate ICD shocks ranges between 55% and 70%. However, data indicate that 90% to 100% of drivers who received ICD discharges while driving continued to drive without causing motor vehicle accidents.<sup>9,10</sup>

**Seizures.** States differ in their rules for reporting drivers who have epilepsy or breakthrough seizures. Physicians should refer to their state regulations when counseling these patients.

POLYPHARMACY

Polypharmacy is common in older adults. Many take psychoactive drugs that can impair tracking, alertness, coordination, and reaction time. With the “Roadwise Rx” tool (www.

Patients’ self-rating of driving correlates poorly with caregivers’ ratings

TABLE 2

Driving recommendations for patients with arrhythmias

Arrhythmia	Treatment	Driving restrictions	
		Private drivers	Professional drivers
<b>Symptomatic bradycardia</b>	Medical management, discontinue offending medicine	Can drive after successful treatment	
	Pacemaker implantation	Can drive after 1–4 weeks	Can drive when pacemaker is functioning appropriately
<b>Supraventricular tachyarrhythmia</b>	Medical treatment	Can drive after successful treatment	
	Catheter ablation	Can drive after successful treatment	Can drive after establishing long-term success
<b>Ventricular arrhythmia</b>	Medical treatment	Can drive after successful treatment	
	Catheter ablation	Can drive after successful treatment	Can drive after establishing long-term success
	Implantable cardioverter-defibrillator (ICD) placement	Primary prevention Driving restricted for 4 weeks	Permanent restriction
		Secondary prevention Driving restricted for 3 months	Permanent restriction
	Replacement of ICD	Driving restricted for 1 week	Permanent restriction
	Replacement of lead system	Driving restricted for 4 weeks	Permanent restriction
	Refusal of ICD	Primary prevention No restriction	Permanent restriction
		Secondary prevention Driving restricted for 7 months	Permanent restriction

BASED ON INFORMATION IN: SORAJJA D, SHEN WK. DRIVING GUIDELINES AND RESTRICTIONS IN PATIENTS WITH A HISTORY OF CARDIAC ARRHYTHMIAS, SYNCOPE, OR IMPLANTABLE DEVICES. CURR TREAT OPTIONS CARDIOVASC MED 2010; 12:443–456; AND TASK FORCE MEMBERS; VIJGEN J, BOTTO G, CAMM J, ET AL. CONSENSUS STATEMENT OF THE EUROPEAN HEART RHYTHM ASSOCIATION: UPDATED RECOMMENDATIONS FOR DRIVING BY PATIENTS WITH IMPLANTABLE CARDIOVERTER DEFIBRILLATORS. EUROPACE 2009; 11:1097–1107.

roadwiserx.com), health care providers and patients can enter the names of medicines to check if they affect driving ability. Nonproprietary on-line tools such as “START” (Screening Tool to Alert doctors to Right Treatment) and “STOPP” (Screening Tool of Older Persons’ Potentially Inappropriate Prescriptions) can be used to prune medication lists.

### DRIVING EVALUATION

America is a nation of highways overflowing with cars. Cars provide transportation but also reflect wealth and personality, particularly for men. Practically, the ability to drive a car al-

lows older men and women to socialize in the community, shop for essentials, and take care of themselves without being a burden. Driving cessation can cause social isolation and depressive symptoms and can strain caregiver resources.

It is therefore understandable for health care providers to feel reluctant or uncomfortable counseling older adults to give up their driving privileges. A health care provider who identifies driving safety concerns can refer a patient to a geriatrician for further risk assessment or to a certified driver rehabilitation specialist (CDRS) for a driving evaluation. A

CDRS will also offer the patient and caregiver information on local resources for transportation alternatives. A list of local CDRSs can be found on the Association for Driver Rehabilitation Specialists website ([www.aded.net](http://www.aded.net)). Many hospitals have occupational therapists who are CDRSs.

The evaluation typically involves an assessment of the driver's knowledge of traffic signs and laws, a cognitive assessment, possibly a simulation, and finally an on-road driving evaluation if deemed appropriate. Medicare coverage depends on diagnosis and the state carrier.

## REFERENCES

1. Williams AF. Teenage drivers: patterns of risk. *J Safety Res* 2003; 34:5–15.
2. Griffith HR, Okonkwo OC, Stewart CC, et al. Lower hippocampal volume predicts decrements in lane control among drivers with amnesic mild cognitive impairment. *J Geriatr Psychiatry Neurol* 2013; 26:259–266.
3. de Simone V, Kaplan L, Patronas N, Wassermann EM, Grafman J. Driving abilities in frontotemporal dementia patients. *Dement Geriatr Cogn Disord* 2007; 23:1–7.
4. Iverson DJ, Gronseth GS, Reger MA, Classen S, Dubinsky RM, Rizzo M; Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter update: evaluation and management of driving risk in dementia: report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2010; 74:1316–1324.
5. Classen S, Brumback B, Monahan M, et al. Driving errors in Parkinson's disease: moving closer to predicting on-road outcomes. *Am J Occup Ther* 2014; 68:77–85.
6. Blitzer ML, Saliba BC, Ghantous AE, Marieb MA, Schoenfeld MH. Causes of impaired consciousness while driving a motorized vehicle. *Am J Cardiol* 2003; 91:1373–1374.
7. Sorajja D, Shen WK. Driving guidelines and restrictions in patients with a history of cardiac arrhythmias, syncope, or implantable devices. *Curr Treat Options Cardiovasc Med* 2010; 12:443–456.
8. Task force members; Vijgen J, Botto G, Camm J, et al. Consensus statement of the European Heart Rhythm Association: updated recommendations for driving by patients with implantable cardioverter defibrillators. *Europace* 2009; 11:1097–1107.
9. Conti JB, Woodard DA, Tucker KJ, Bryant B, King LC, Curtis AB. Modification of patient driving behavior after implantation of a cardioverter defibrillator. *Pacing Clin Electrophysiol* 1997; 20:2200–2204.
10. Lerecoveux M, Ait Saïd M, Paziaud O, et al. Automobile driving and implantable defibrillators. *Arch Mal Coeur Vaiss* 2005; 98:288–293. Article in French.

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