

Driver safety in older adults

The physician's role in assessing driving skills of older patients

Germaine L. Odenheimer, MD

Physicians play an important role in addressing driving safety issues with their patients. This is especially true when age-associated changes, medical conditions and medications are likely to increase crash risk. Unfortunately, physicians have little or no training in determining crash risk. Furthermore they are reluctant to alienate their patients by raising concerns about driving. In response to a growing need, the American Medical Association (AMA), with support from the National Highway Traffic Safety Administration (NHTSA), has produced materials to help physicians approach this issue. This article provides background about the aging and medical influences on driving, a summary of selected information from the AMA guide, and additional resources.

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When 87-year-old George Weller plowed his car through the Santa Monica Farmer's Market in July 2003, leaving 10 dead and more than 60 injured, it sounded an alarm for those of us in medicine who tried to ignore the issue of driving safety in our older patients. Although Mr. Weller's case is still tied up in the courts and much of the details have been kept from the public, we do know that he tested negative for drugs and

alcohol. He had passed his vision and written tests and had had no accidents or violations at the time of his last license renewal (two years prior to the incident).¹ So, why did this happen? Was this tragedy preventable?

Was this vehicular homicide as he was charged? Was he violent, negligent, or incompetent? He allegedly confused the gas and brake pedals. Should the state have monitored him more closely? If so, on what basis and

in what way should he have been monitored? Was the city negligent for inadequate barriers, as some lawsuits have claimed? Did his family suspect a problem? Were his physicians responsible? Did they report him to the state? Should they have?

No diagnostic information has been released, but if Mr. Weller carried a diagnosis of dementia, his doctors would have been mandated by the state of California to report his status to the state. In fact, California and Pennsylvania have the most directive laws in this regard.²

Most states have no "mandatory" physician reporting related to driving for any medical condition, even uncontrolled epilepsy,³ although virtually all states "allow" reporting by physicians. Indeed, few states provide any guidance on driving and older persons with medical conditions. The lines of culpability have been vague. Which assessments and interventions might help predict and prevent future disasters, while respecting the independence and dignity of our patients? The state, the community, and families largely depend on physicians to take the lead. It seems reasonable that physicians have the expertise and responsibility for assessing medical conditions that impact driver safety.³

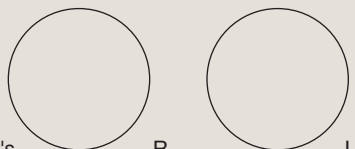
This article provides a brief overview of the public health issues, recommendations from the American Medical Association (AMA) guide, and re-

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Table 1 ADReS from AMA guide

Visual fields: Shade in any areas of deficit.



Patient's

R

L

Visual acuity: _____ OU

Was the patient wearing corrective lenses? If yes, please specify:

Rapid pace walk: _____ seconds

Was this performed with a walker or cane? If yes, please specify:

Range of motion: Specify 'Within Normal Limits' or 'Not WNL.' If not WNL, describe.

	RIGHT	LEFT
Neck rotation		
Finger curl		
Shoulder and elbow flexion		
Ankle plantar flexion		
Ankle dorsiflexion		

Notes:

Motor strength: Provide a score on the scale of 0-5.

	RIGHT	LEFT
Shoulder adduction		
Shoulder abduction		
Wrist flexion		
Wrist extension		
Hand grip		
Hip flexion		
Hip extension		
Ankle dorsiflexion		
Ankle plantar flexion		

Trail-Making Test, Part B: _____ seconds

Clock drawing test: Please check 'yes' or 'no' for each of the following criteria.

- All 12 hours are placed in correct numeric order, starting with 12 at the top YES NO
- Only the numbers 1-12 are included (no duplicates, omissions, or foreign marks) YES NO
- The numbers are drawn inside the clock circle YES NO
- The numbers are spaced equally or nearly equally from each other YES NO
- The numbers are spaced equally or nearly equally from the edge of the circle YES NO
- One clock hand correctly points to two o'clock YES NO
- The other hand correctly points to eleven o'clock YES NO
- There are only two clock hands YES NO

SAFETY QUESTIONS FOR THE CAREGIVER

Name of Patient: _____ **Date:** _____

Name of Person responding: _____

INSTRUCTIONS: please check the box with your answer

How often does the patient drive?

- Never Less than once a week Once a week A few times a week Almost daily Don't know

How often do you ride with him or her? Never Rarely Sometimes Often

Do you think he or she is a safe driver? Yes No I don't know

Driving behaviors OBSERVED in past year:

	Never	Rarely	Sometimes	Often	Don't know
Drives too slowly or doesn't keep steady speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doesn't look when backs up, changes lanes, yields, turns corners, or merges into traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Follows too closely or drifts out of lane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Makes turns from the wrong lane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doesn't stop at red lights or stop signs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stops car in traffic for no apparent reason	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets lost in familiar areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has traffic tickets, car crashes, or bangs into things with car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drives the wrong way against traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goes forward or backward by mistake or confuses gas and brake pedal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Source: Adapted for GERIATRICS based on information from reference 2. Reprinted with permission.

Table 2 Red flags alert physicians to possibility of unsafe driving

- ▶ Recent acute events: stroke, syncope, vertigo, myocardial infarction, surgery, seizure, delirium, trauma, and falls
- ▶ Conditions affecting vision, consciousness, attention, cognition, judgment, and motor and/or sensory function
- ▶ Medications: especially those with sedative or anticholinergic effects
- ▶ Concern raised by the family about driving safety

Source: Created for GERIATRICS by GL Odenheimer, MD.

Table 3 Examples of red flag conditions

Vision

Cataracts, glaucoma, macular degeneration, retinitis pigmentosa, hypertensive or diabetic retinopathy²³

Consciousness

Seizures, syncope, arrhythmia, sleep apnea, hypoglycemia

Attention

Medications, COPD, CHF, pain fatigue, hyperglycemia, dehydration, sleep apnea

Cognition and judgment

Dementia, Parkinson’s disease, stroke, NPH, depression, psychosis

Motor or sensory skills

Stroke, neuropathy, amputation

COPD=chronic obstructive pulmonary disease
CHF=congestive heart failure
NPH=normal pressure hydrocephalus

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sources to facilitate our abilities as physicians to approach this emotionally-charged issue in a rational, systematic, and fair way.

Background and key issues

DEMOGRAPHIC IMPERATIVE AND AGE-BASED TESTS.

The tidal wave of aging baby boomers is forcing us to confront public health implications of aging drivers. Motor vehicle crashes are the number one cause of injury-related death in people age 65 to 74.⁴ Despite concerns about age discrimination, it is the elevated risk associated with age that has led to age-based licensing policies in a growing number of states.² License renewal procedures for older drivers may in-

clude more frequent renewals after a specified age, renewal in person, or testing often not routinely required of younger drivers (eg, vision, road tests).

Fifteen states have more frequent testing for older drivers starting at ages ranging from 61 to 81, with eight states starting above age 70. Age-based vision testing is required in the following states (ages in parentheses): Florida (80), Virginia (80), South Carolina (65), Utah (65), Georgia (64), Oregon (50), Maine (40), Maryland (40), and the District of Columbia (70). Three states require road testing: Illinois (75), New Hampshire (75) and North Carolina (60). Conversely, Tennessee is the only state that drops all renewal require-

ments for drivers over age 65.⁵

NORMAL AGING CHANGES. Aging causes predictable changes (eg, slowing reaction time, taking longer to make complex decisions).⁶ Older adults have more difficulty with multi-tasking and selective attention.⁶ This population is less accurate in judging speed and distance.⁶ Pupils become smaller and slower to adapt to sudden changes in light intensity, such as headlights. These so-called “normal” aging changes do not typically cause substantial decline in function for most activities, although older drivers do tend to curb night driving. In addition, driving issues correlate with measures of frailty, falls, and dementia.⁷⁻⁹ Therefore, clinical performance-based measures may be useful in identifying potentially dangerous drivers.⁸

With the great heterogeneity in older populations in health and function, age should not be the determining factor for driver licensing. Driving is already considered one of the most dangerous activities at any age. So when is the risk unacceptable? This is a societal and political question for which definitive answers will remain elusive.

INCREASED RISK OF CRASHES. Absolute crash risk increases with advancing age. When exposure (number of miles driven) is considered, the rate is substantially higher.¹⁰⁻¹³ Teenagers constitute a high risk group whose crash rates are exceeded only by drivers over age 85. The increase in crashes in old age is likely due to common age-associated diseases and medications used to treat them.

INCREASE IN DISEASES AND MEDICATIONS. At least 30% of adults over age 75 have significant vision impairment and 50% have significant hearing impairment. In a study conducted in East Boston, dementia was found in 50% of community-dwelling elderly over age 85,¹⁴ and virtually all elderly have some degenerative joint disease.⁷ Related to the increase in disease, the average number of medications also rises with age, further increasing the likelihood

for negative effects on driving safety.

INCREASED FRAGILITY AND MORTALITY. Not only do crash rates increase with age, but mortality rates are even more impressive. Drivers over age 85 are nine times more likely to die in a crash than drivers age 25 to 69.^{13,15} Even when controlling for crash severity, older drivers are four times more likely to die than a 20-year-old driver.¹⁰

INADEQUATE COMPENSATORY BEHAVIORS. Crash and mortality statistics become more significant when noting that older drivers tend to drive less, slower, and avoid high-risk situations (eg, driving at night, in bad weather, and on unfamiliar roads).^{12,16}

ASSESSMENT APPROACHES INCONSISTENT. There is no consensus on types of assessments to determine driver safety.¹⁷⁻¹⁹ Road tests (ie, performance-based driving evaluations) have been the traditional approach, but safety and reliability issues have led to the pursuit of safer and more reliable surrogates for driving.^{20,21} Specific screening measures include Useful Field of View,^{22,23} Wayfinding,²⁴ simulator-based tests,²⁵ the Mini Mental State Exam and the Trail-Making Test Part B.^{9,26}

The American Medical Association (AMA) has proposed a clinical screening tool based on evidence for components of the test. This test is called Assessment of Driving-Related Skills (ADReS) and is intended for clinical evaluation of drivers, although this test is not yet widely used nor familiar to most clinicians (table 1).²

PHYSICIANS CAN AND DO MAKE A DIFFERENCE. Physicians play a pivotal role in addressing driving safety issues with patients. Families expect direction and support from the physician,^{2,27,28} particularly regarding counseling and evaluation of the health-related fitness of older drivers.²⁷ Careful management of many conditions, such as diabetes or congestive heart failure, and/or reduction of medications can improve driver safety.

PHYSICIANS ARE RELUCTANT. It may be more difficult to tell a patient to stop

Table 4 Interventions: Ways to improve patient safety and independence

- ▶ Discuss driving safety issues routinely with the patient before they have to stop to allow for mental preparation and advanced planning (a driving advanced directive)
- ▶ Stabilize medical conditions and minimize psychoactive drugs
- ▶ Recommend avoiding high-risk driving situations
- ▶ Provide self-assessment tools: Hartford Foundation and AAA
- ▶ Encourage driver refresher classes offered by AARP and AAA
- ▶ Consult a certified driving specialist for an on-road driving assessment
- ▶ Refer to AAA for transportation options and home services
- ▶ Support community-based transportation initiatives for frail elderly

AAA=American Automobile Association
AARP=American Association of Retired Persons
Source: Created for GERIATRICS by GL Odenheimer, MD.

Table 5 AMA ethical opinion (E-2.24) regarding impaired drivers and their physicians

Physicians should:

- ▶ Assess physical and mental impairments that can affect driving
- ▶ Discuss driving concerns with patients and families
- ▶ Treat conditions that affect driving safety
- ▶ Consider a restricted driving plan
- ▶ Report to the State if mandated by state law or the patient is clearly unsafe and is unlikely to stop driving

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driving than to give a terminal diagnosis. Patients are often resistant and angry about recommendations to stop driving. It is not unusual for a patient to say that he would rather be dead. Physicians are reluctant to alienate and possibly lose their patients by tackling this issue.⁸ Furthermore, physicians have little or no training in determining driving risk,^{18,28} and many do not know how to report potentially dangerous drivers.²⁸ Practice guidelines have been impractical, relying on measures unfamiliar to the general practitioner.²⁹ The AMA guide was produced to clarify physician responsibility and guide the assessment and management of medically impaired drivers.^{2,18}

(Editor's note: Visit www.geri.com for an accompanying physician resource list.)

INADEQUATE TRANSPORTATION. If the patient does stop driving, his or her life may become profoundly altered, often leading to depression, dependency, and isolation.³⁰⁻³² This is particularly true because transportation options for frail or medically impaired patients are inadequate. Even in communities with excellent public transportation programs, the needs of an aging population are rarely met.³³ National surveys reveal that after the cost of medications, transportation is the top concern among the elderly.^{12,34} As life-long drivers, most have never learned to use

Figure 1 Sample letter to the Department of Motor Vehicles

Date:

State Department of Public Safety
 Driver's License, Medical Section
 Address:
 Phone:
 FAX:

To Whom It May Concern:

I am notifying you of my concern regarding the ability of this patient to operate a motor vehicle safely.

Patient's name _____
 Date of birth _____
 Address: _____
 Phone: _____

I believe this individual should be reviewed for one or more of the following concerns:

Medical condition or medication use
 Vision problems
 Cognitive limitations
 Physical limitations
 Other: _____

I request one or more of the following:

Written examination
 Driving skills examination
 Revoke driver's license
 Other: _____

The patient _____ caregiver (name) _____ have been informed of this action.

Please let me know how else I can facilitate your decision.

Sincerely,

Your name
 Position
 Address

Source: Created for GERIATRICS by GL Odenheimer, MD.

public transportation and often find the walk to, or wait at, a bus stop too difficult to manage. They do not want to ask for rides from friends or neighbors. They do not want to ride in stigmatizing senior or handicapped vans. They do not feel comfortable with taxi drivers who come from different ethnic and sociodemographic backgrounds. They want the independence and dignity they attach to driving.¹²

AMA AND NHTSA RESOURCES TO HELP PHYSICIANS. The AMA, via cooperative agreement with the National Highway Traf-

fic Safety Administration (NHTSA), has produced materials and designated trainers to teach physicians how to approach the driving issue. The AMA's Physician's Guide to Advising and Counseling Older Drivers (The AMA Guide) is comprehensive and extensive.² Although it can take four to six hours to present, it is a useful resource for specific questions related to assessment, individual state driver licensing policies, billing codes, and patient information. It is available in hard copy from the AMA and on its website

<http://www.ama-assn.org/ama/pub/category/10791.html>.²

Recognizing potential risk

When addressing driving safety in our patients, certain factors should raise "red flags" (table 2) based on medical and functional history, medication review, examination, and/or discussion with the family.⁷

Table 3 offers specific examples of red flag conditions. Specific medication classes that raise driving risk include anticholinergics, antidepressants, anxiolytics, sedatives and hypnotics, narcotics, and cardiac medications.²

Initial observations of the patient's demeanor and appearance can provide important clues. Watch for signs of poor hygiene and grooming, inattention, poor comprehension, confusion, and difficulty getting in and out of a chair. The AMA guide provides the ADReS assessment tool, which includes measures of vision, cognition, and motor and sensory function.^{2,17}

Drivers are notoriously poor at evaluating their driving skills.^{25,35} Therefore, questions about driving should be directed to a person who has observed the driving behaviors.^{20,21}

Once potential problems are identified, there are interventions at every level that may improve patient safety and independence (table 4).

WHEN AND WHERE TO REFER. If a physician is uncertain whether a patient is at high risk, the patient can be referred to a driver rehabilitation specialist. These specially trained individuals can conduct on-the-road evaluations and pre-driving clinical assessments. A list of certified driver rehabilitation specialists can be obtained from the Association for Driver Rehabilitation Specialists (<http://www.driver-ed.org>). These specialists can also offer training and guidance to improve driving safety, including adaptations to the motor vehicle (eg, hand controls, special mirrors). Average cost of an assessment is \$300 (range, \$200-800). In general,

private insurance and Medicare do not cover this assessment. This is an area of intense discussion, which has prompted the American Occupational Therapy Association to actively lobby for consistent Medicare coverage of OT-performed driver assessment.³²

When insurers recognize that driving is a significant IADL, adequate reimbursement for driver assessment should follow. (It is important to note, however, that although driving is not specified in the Lawton IADL scale, which refers only to “transportation” as an IADL, the vast majority of older adults continue to drive as the primary source for transportation.³⁶

Counseling the patient

Physicians are advised to begin the discussion about driving issues before the patient has to stop driving.

Based on extensive clinical experience with driving issues, I ask patients the following:

- ▶ Have you thought about what to do if you have to stop driving?
- ▶ What are the options?
- ▶ Who can help you make this decision?

It is critical that the family be involved in these discussions. When dealing with a patient with dementia, statements like the following have been useful in beginning the discussion: “When my patients have memory problems, there are three things that get them into trouble: managing their medications, finances, and driving.” Then ask:

- ▶ How are you managing all of your medications?
- ▶ Who is handling the books?
- ▶ Who does the driving?

When it is determined that the patient should not drive, it is helpful to write a “Do Not Drive” prescription. It is critical to clearly document the discussion and recommendations and to plan follow-up discussions.²

Legal, ethical considerations

When addressing driving safety with

patients, three potentially conflicting legal and/or ethical considerations arise:

- ▶ protect the patient’s interest,
- ▶ protect the public’s interest, and/or
- ▶ protect the physician’s interest.⁸

There is often tension between protecting a patient’s autonomy and safety. In fact, these goals may not be compatible. When evidence is overwhelming that the patient is unsafe, it is the responsibility of the physician to intervene.²

Physicians are caught in a quandary when it comes to reporting patients to authorities, with regulations from the Health Insurance Portability and Accountability Act (HIPAA) raising additional liability concerns. The AMA now recommends reporting in certain situations. The AMA published an “ethical opinion” (table 5) regarding the physician’s role,² as a result of the variability of state laws, as well as rising ethical and legal awareness. Consider these legal and ethical implications for reporting:

- ▶ All states allow volunteer reporting by physicians.
- ▶ Some states offer immunity and/or anonymity for reporting.
- ▶ HIPAA allows reporting to comply with state law.
- ▶ AMA recommends reporting when public safety is at high risk.

See the sample letter to the Department of Motor Vehicles (figure 1).

Billing and CPT codes


Due to the time involved in conducting these assessments, physicians are advised to bill based on time spent. This author typically spends at least an hour addressing the medical and cognitive issues related to driving. The evaluation can be billed as a Comprehensive Preventive Medicine and Physical Exam, using modifier-25 to allow billing for same-day evaluation by the same provider.

In addition, counseling or risk factor reduction intervention can allow for additional time to be spent. The

codes and rules for billing should be verified on an ongoing basis.

Conclusion

Of all the conversations we have with patients and families, the driving discussion can be the most difficult. We are a society of automobile drivers. Our community structure is based on the ready availability of the car. Our patients and communities deserve a fair but firm stance when addressing medical conditions that increase driving risk. The AMA guide can help identify at-risk patients and can provide guidance on assessment and management. As transportation options improve, the outcomes should become less devastating.³³

It is critical to educate stakeholders (ie, the public, medical community, insurers, licensing, police, judges). State laws and policies can be made more accessible. Driver safety issues can become a routine part of risk management training for physicians. Clinical assessments (eg, ADReS) can be disseminated. Availability of on-road driver assessments can be enhanced with appropriate reimbursement from insurers. Driver improvement classes and behind-the-wheel training can become part of standard recommendations for older patients. Medical advisory boards to driver licensing agencies can be more involved in developing appropriate policies on medically impaired drivers and the physician’s role. Advanced directives can be expanded to include surrogate decision-making regarding time to stop driving. The need for transportation assistance via enhanced transportation options and coordination as well as planned communities should be addressed. Finally, AMA training outcomes should be identified to establish the impact of such programs on physician knowledge, attitudes, and practice. 

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CGM / Sal BR, 333 West 34th Street, New York, NY 10001
Mellon Trust, 525 William Penn Place, Pittsburgh, PA 15259
State Street Bank & Trust Co, 1776 Heritage Drive, North Quincy, MA 02171
Investors Bank, 200 Clarendon Street, Boston, MA 02116
Northern Trust, 801 South Canal, Chicago, IL 60607
MUFG / UFJ, 520 Madison Avenue, New York, NY 10022

12. Does Not Apply

13. **Publication Title:** *Geriatrics*
14. **Issue Date for Circulation Data Below:** August 2006
15. **Extent and Nature of Circulation**

	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
A. Total Number of Copies	79,715	77,661
B. Paid and/or Requested Circulation		
1. <i>Paid/Requested Outside-County Mail Subscriptions Stated on Form 3541</i>	49,884	43,961
2. <i>Paid In-County Subscriptions Stated on Form 3541</i>	0	0
3. <i>Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution (Includes non-USPS requester distribution)</i>	385	364
4. <i>Other Classes Mailed Through the USPS</i>	0	0
C. Total Paid and/or Requested Circulation	50,269	44,325
D. Free Distribution by Mail		
1. <i>Outside-County as Stated on Form 3541</i>	28,606	32,742
2. <i>In-County as Stated on Form 3541</i>	0	0
3. <i>Other Classes Mailed Through the USPS</i>	0	0
E. Free Distribution Outside the Mail	671	504
F. Total Free Distribution	29,276	33,246
G. Total Distribution	79,545	77,571
H. Copies Not Distributed	170	90
I. Total	79,715	77,661
J. Percent Paid and/or Requested Circulation	63.20%	57.14%

16. **Publication required.**
Will be printed in the October 2006 issue of this publication

17. **Name and Title of Editor, Publishers, Business Manager, or Owner:** Ronda Hughes, Circulation Director
Date: 9/6/06

I certify that the statements made by me above are correct and complete.