PHYSICIAN'S GUIDE TO

Assessing and Counseling Older Drivers

2nd edition

Physician's Guide to Assessing and Counseling Older Drivers

The information in this guide is provided to assist physicians in evaluating the ability of their older patients to operate motor vehicles safely as part of their everyday, personal activities. Evaluating the ability of patients to operate commercial vehicles or to function as professional drivers involves more stringent criteria and is beyond the scope of this publication.

This guide is not intended as a standard of medical care, nor should it be used as a substitute for physicians' clinical judgement. Rather, this guide reflects the scientific literature and views of experts as of December 2009, and is provided for informational and educational purposes only. None of this guide's materials should be construed as legal advice nor used to resolve legal problems. If legal advice is required, physicians are urged to consult an attorney who is licensed to practice in their state.

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For further information about the guide, please contact:
Joanne G. Schwartzberg, MD
Director, Aging and Community Health
American Medical Association
515 N. State Street
Chicago, IL 60654

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Educational Activity Objectives
- Increase physician awareness of the safety risks of older drivers as a public health issue
- Identify patients who may be at risk for unsafe driving
- Use various clinical screens to assess patients' level of function for driving fitness
- Employ referral and treatment options for patients who are no longer fit to drive
- Practice counseling techniques for patients who are no longer fit to drive
- Demonstrate familiarity with State reporting laws and legal/ethical issues surrounding patients who may not be safe on the road

Instructions for claiming *AMA PRA Category 1 Credits*™
To facilitate the learning process, we encourage the following method for physician participation: Read the material in the *Physician's Guide to Assessing and Counseling Older Drivers*, complete the CME Questionnaire & Evaluation, and then mail both of them to the address provided. To earn the maximum 6.25 *AMA PRA Category 1 Credits*™ , 70 percent is required to pass and receive the credit.

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First edition: Primary Authors

Claire C. Wang, MD
American Medical Association

Catherine J. Kosinski, MSW
American Medical Association

Joanne G. Schwartzberg, MD
American Medical Association

Anne Shanklin, MA
American Medical Association

Second edition: Principal Faculty Authors

Editor: David B. Carr, MD
Associate Professor of Medicine and Neurology Washington University at St. Louis Clinical Director

Planning Committee:
David B. Carr, MD;
Associate Professor of Medicine and Neurology Washington University at St. Louis Clinical Director

Joanne G. Schwartzberg, MD
Director, Aging and Community Health, American Medical Association

Lela Manning, MPH, MBA
Project Coordinator, American Medical Association

Jessica Sempek, MS
Program Administrator, American Medical Asscoiation

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This guide benefited significantly from the expertise of the following individuals who served as reviewers in this project.

Second edition: Content Consultants

Lori C. Cohen
AARP
Senior Project Manager, Driver Safety

Jami Croston, OTD
Washington University at St. Louis

T. Bella Dinh-Zarr, PhD, MPH
Road Safety Director, FIA Foundation
North American Director, MAKE ROADS SAFE–The Campaign for Global Road Safety

John W. Eberhard, PhD
Consultant, Aging and Senior Transportation Issues

Camille Fitzpatrick, MSN, NP
University of California Irvine
Clinical Professor Family Medicine

Mitchell A. Garber, MD, MPH, MSME
National Transportation Safety Board
Medical Officer

Anne Hegberg, MS, OTR/L
Marionjoy Rehabilitation Hospital
Certified Driver Rehabilitation Specialist

Patti Y. Horsley, MPH
Center for Injury Prevention Policy and Practice
SDSU EPIC Branch
California Department of Public Health

Linda Hunt, OTR/L, PhD
Pacific University
School of Occupational Therapy
Associate Professor

Jack Joyce
Maryland Motor Vehicle Administration
Driver Safety Research Office
Senior Research Associate

Karin Kleinhans OTR/L
Sierra Nevada Memorial Hospital
Center for Injury Prevention Policy & Practice
Occupational Therapy Association of California

Kathryn MacLean, MSW
St. Louis University

Mangadhara R. Madineedi, MD, MSA
Harvard Medical School
Instructor in Medicine
VA Boston Healthcare System
Director, Geriatrics & Extended Care Service Line

Richard Marottoli, MD, MPH
American Geriatrics Society

John C. Morris
Professor of Neurology
Washington University School of Medicine

Germaine L. Odenheimer, MD
VAMC
Donald W. Reynolds Department of Geriatric Medicine
Associate Professor

Alice Pomidor, MD, MPH
Florida State University College of Medicine
Associate Professor, Department of Geriatrics

Kanika Mehta Rankin
Loyola University Chicago School of Law (2nd year) Juris Doctorate Candidate, 2011

Yael Raz, MD
American Academy of Otolaryngology

William H. Roccaforte, MD
American Association for Geriatric Psychiatry
Nebraska Medical Center
Department of Psychiatry

Gayle San Marco, OTR/L, CDRS
Northridge Hospital Medical Center
Project Consultation, Center for Injury Prevention Policy & Practice

Freddie Segal-Gidan, PA-C, PhD
American Geriatrics Society

William Shea, OTR/L
Fairlawn Rehabilitation Hospital

Patricia E. Sokol, RN, JD
Senior Poilcy Analyst, Patient Safety
American Medical Association

Esther Wagner, MA
National Highway Traffic Safety Administration

First edition: Advisory Panel

Sharon Allison-Ottey, MD
National Medical Association

Joseph D. Bloom, MD
American Psychiatric Association

Audrey Rhodes Boyd, MD
American Academy of Family Physicians

David B. Carr, MD
Washington University School of Medicine

Bonnie M. Dobbs, PhD
University of Alberta
Association for the Advancement of Automotive Medicine

John Eberhard, PhD
National Highway Traffic Safety Administration

Laurie Flaherty, RN, MS
National Highway Traffic Safety Administration

Arthur M. Gershkoff, MD
American Academy of Physical Medicine and Rehabilitation

Brian Greenberg, MEd
American Association of Retired Persons

Lynne M. Kirk, MD, FACP
American College of Physicians – American Society of Internal Medicine

Marian C. Limacher, MD, FACC, FSGC
American College of Cardiology
Society of Geriatric Cardiology

Richard Marottoli, MD, MPH
American Geriatrics Society

Lylas G. Mogk, MD
American Academy of Ophthalmology

John C. Morris, MD
American Academy of Neurology
Alzheimer's Association

James O'Hanlon, PhD
Tri-Counties Regional Center

Cynthia Owsley, PhD, MSPH
University of Alabama at Birmingham

Robert Raleigh, MD
Maryland Department of Transportation

William Roccaforte, MD
American Association for Geriatric Psychiatry

Jose R. Santana Jr., MD, MPH
National Hispanic Medical Association

Melvyn L. Sterling, MD, FACP
Council on Scientific Affairs
American Medical Association

Jane Stutts, PhD
University of North Carolina Highway Safety Research Center

First edition: Review Committee

Geri Adler, MSW, PhD
Minneapolis Geriatric Research Education Clinical Center

Reva Adler, MD
American Geriatrics Society

Elizabeth Alicandri
Federal Highway Administration

Paul J. Andreason, MD
Food and Drug Administration

Mike Bailey
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Robin Barr, PhD
National Institute on Aging

Arlene Bierman, MD, MS
Agency for Healthcare Research and Quality

Carol Bodenheimer, MD
American Academy of Physical Medicine and Rehabilitation

Jennifer Bottomley, PhD, MS, PT
American Physical Therapy Association

Thomas A. Cavalieri, DO
American Osteopathic Association

Lori Cohen
American Association of Motor Vehicle Administrators

Joseph Coughlin, PhD
Gerontological Society of America

T. Bella Dinh-Zarr, PhD, MPH
AAA

Barbara Du Bois, PhD
National Resources Center on Aging and Injury

Leonard Evans, PhD
Science Serving Society

Connie Evaschwick, ScD., FACHE
American Public Health Association

Jeff Finn, MA
American Occupational Therapy Association

Jaime Fitten, MD
UCLA School of Medicine

Marshall Flax, MA
Association for the Education and Rehabilitation of the Blind and Visually Impaired

Linda Ford, MD
Nebraska Medical Association

Barbara Freund, PhD
Eastern Virginia Medical School

Mitchell Garber, MD, MPH, MSME
National Transportation Safety Board

Andrea Gilbert, COTA/L
Rehabilitation Institute of Chicago

Claudia Grimm, MSW
Oregon Department of Transportation

Kent Higgins, PhD
Lighthouse International

Linda Hunt, PhD, OTR/L
Maryville University

Mary Janke, PhD
California Department of Motor Vehicles

Gary Kay, PhD
Washington Neuropsychological Institute

Shara Lynn Kelsey
Research and Development
California Department of Motor Vehicles

Susan Kirinich
National Highway Traffic Safety Administration

Donald Kline, PhD
University of Calgary

Philip LePore, MS
New York State Office for the Aging

Sandra Lesikar, PhD
US Army Center for Health Promotion and Preventive Medicine

William Mann, OTR, PhD
University of Florida

Dennis McCarthy, MEd, OTR/L
University of Florida

Gerald McGwin, PhD
University of Alabama

Michael Mello, MD, FACEP
American College of Emergency Physicians

Barbara Messinger-Rapport, MD, PhD
Cleveland Clinic Foundation

Alison Moore, MD, MPH
American Public Health Association

David Geffen School of Medicine,
University of California

Anne Long Morris, EdD, OTR/L
American Society on Aging

Germaine Odenheimer, MD
Center for Assessment and Rehabilitation of Elderly Drivers

Eli Peli, M.Sc., OD
Schepens Eye Research Institute

Alice Pomidor, MD, MPH
Society of Teachers of Family Medicine

George Rebok, MA, PhD
Johns Hopkins School of Hygiene and Public Health

Selma Sauls
Florida Department of Highway Safety and Motor Vehicles

Susan Samson
Pinellas/Pasco Area Agency on Aging

Steven Schachter, MD
Epilepsy Foundation

Frank Schieber, PhD
University of South Dakota

Freddi Segal-Gidan, PA, PhD
American Geriatrics Society

Melvin Shipp, OD, MPH, DrPh
University of Alabama at Birmingham

Richard Sims, MD
American Geriatrics Society

Kristen Snyder, MD
Oregon Health & Science University School of Medicine

Susan Standfast, MD, MPH
American College of Preventative Medicine

Holly Stanley, MD
American Geriatrics Society

Loren Staplin, PhD
Transanalytics and Texas Transportation Institute

Wendy Stav, PhD, OTR, CDRS
American Occupational Therapy Association
Cleveland State University

Donna Stressel, OTR, CDRS
Association of Driver Rehabilitation Specialists

Cathi A. Thomas, RN, MS
Boston University Medical Center
American Parkinson Disease Association

John Tongue, MD
American Academy of Orthopedic Surgery

Patricia Waller, PhD
University of Michigan

Lisa Yagoda, MSW, ACSW
National Association of Social Workers

Patti Yanochko, MPH
San Diego State University

Richard Zorowitz, MD
National Stroke Association

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Preface

The science of public health and the practice of medicine are often deemed two separate entities. After all, the practice of medicine centers on the treatment of disease in the individual, while the science of public health is devoted to prevention of disease in the population. However, physicians can actualize public health priorities through the delivery of medical care to their individual patients.

One of these priorities is the prevention of injury. More than 400 Americans die each day as a result of injuries sustained from motor vehicle crashes, firearms, poisonings, suffocation, falls, fires, and drowning. The risk of injury is so great that most people sustain a significant injury at some time during their lives.

The *Physician's Guide to Assessing and Counseling Older Drivers* was created by the American Medical Association (AMA), with support from the National Highway Traffic and Safety Administration (NHTSA), to help physicians address preventable injuries—in particular, those incurred in motor vehicle crashes. Currently, motor vehicle injuries are the leading cause of injury-related deaths among 65- to 74-year-olds and are the second leading cause (after falls) among 75- to 84-year-olds. While traffic safety programs have reduced the fatality rate for drivers under age 65, the fatality rate for older drivers has consistently remained high. Clearly, additional efforts are needed.

Physicians are in a leading position to address and correct this health disparity. By providing effective health care, physicians can help their patients maintain a high level of fitness, enabling them to preserve safe driving skills later in life and protecting them against serious injuries in the event of a crash. By adopting preventive practices—including the assessment and counseling strategies outlined in this guide—physicians can better identify drivers at risk for crashes, help enhance their driving safety, and ease the transition to driving retirement if and when it becomes necessary.

Through the practice of medicine, physicians have the opportunity to promote the safety of their patients and of the public. The AMA and NHTSA urge you to use the tools in this *Physician's Guide to Assessing and Counseling Older Drivers* to forge a link between public health and medicine.

The project was supported by cooperative agreement number DTNH22-08-H-00185 *from the National Highway Traffic Safety Administration (NHTSA) of the Department of Transportation. While this guide was reviewed by NHTSA, the contents of this guide are those of the authors and do not represent the opinions, policies or official positions of NHTSA.*

CHAPTER 1

Safety and the Older Driver With Functional or Medical Impairments: An Overview

CHAPTER 1

Safety and the Older Driver With Functional or Medical Impairments

An Overview

Mrs. Simon, a 67-year-old woman with type 2 diabetes mellitus and hypertension, mentions during a routine check-up that she almost hit a car while making a left-hand turn when driving two weeks ago. Although she was uninjured, she has been anxious about driving since that episode. Her daughter has called your office expressing concern about her mother's driving abilities. Mrs. Simons admits to feeling less confident when driving and wants to know if you think she should stop driving. What is your opinion?

Mr. Evans, a 72-year-old man with coronary artery disease and congestive heart failure, arrives for an office visit after fainting yesterday and reports complaints of "light-headedness" for the past two weeks. When feeling his pulse, you notice that his heartbeat is irregular. You perform a careful history and physical examination, and order some laboratory tests to help determine the cause of his atrial fibrillation. When you ask Mr. Evans to schedule a follow-up appointment for the next week, he tells you he cannot come at that time because he is about to embark on a two-day road trip to visit his daughter and newborn grandson. Would you address the driving issue and if so, how? What would you communicate to the patient?

Patients like Mrs. Simon and Mr. Evans are becoming more common in physicians' practices. Buoyed by the large ranks of "baby boomers" and increased life expectancy, the U.S. older adult population is growing nearly twice as fast as the total population.[1,2] Within this cohort of older adults, an increasing proportion will be licensed to drive, and it is expected that these license-holders will drive more miles than older drivers do today.[3]

As the number of older drivers with medical conditions expands, patients and their families will increasingly turn to physicians for guidance on safe driving. Physicians will have the challenge of balancing their patients' safety against their transportation needs and the safety of society.

This guide is intended to help you answer the questions, "At what level of severity do medical conditions impair safe driving?" "What can I do to help my patient drive more safely?"*, and if necessary to help you counsel patients about driving cessation and alternate means of transportation. Mobility counseling and discussing alternative modes of transportation need to take a more prominent role in the physician's office. To these ends, we have reviewed the scientific literature and collaborated with clinicians and experts in this field to produce the following physician tools:

- An office-based assessment of medical fitness to drive. This assessment is outlined in the algorithm, *Physician's Plan for Older Drivers' Safety* (PPODS), presented later in this chapter.
- A functional assessment battery, the Assessment of Driving Related Skills (ADReS). This can be found in Chapter 3.
- A reference table of medical conditions and medications that may affect driving, with specific recommendations for each, can be found in Chapter 9.

In addition to these tools, we also present the following resources:

- Information to help you navigate the legal and ethical issues regarding patient driving safety. Information

1. National Center for Statistics & Analysis. Traffic Safety Facts 2000: Older Population. DOT HS 809 328. Washington, DC: National Highway Traffic Safety Administration.
2. Population Projections of the United States by Age, Sex, Race, Hispanic, Origin, and Nativity: 1999 to 2100. Population Projections Program, Population Division, Census Bureau Internet release date: January 13, 2000. Revised date: February 14, 2000. Suitland, MD: U.S. Census Bureau.
3. Eberhard, J. Safe Mobility for Senior Citizens. International Association for Traffic and Safety Services Research. 20(1):29–37.

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on patient reporting, with a state-by-state list of licensing criteria, license renewal criteria, reporting laws, and Department of Motor Vehicles (DMV) contact information, can be found in Chapters 7 and 8.

- Recommended Current Procedural Terminology (CPT®) codes for assessment and counseling procedures. These can be found in Appendix A.
- Handouts for your patients and their family members. These handouts, located in Appendix B, include a self-screening tool for driving safety, safe driving tips, driving alternatives, and a resource sheet for concerned family members. These handouts can be removed from the guide and photocopied for distribution to patients and their family members.

We understand that physicians may lack expertise in communicating with patients about driving, discussing the need for driving cessation (delivering bad news), and being aware of viable alternative transportation options to offer. Physicians also may be concerned about dealing with the patient's anger, or even losing contact with the patient. Driving is a sensitive subject, and the loss of driving privileges can be stressful. While these are reasonable concerns, there are ways to minimize the impact on the doctor-patient relationship when discussing driving. We provide sample approaches in subsequent chapters in the areas of driving assessment, rehabilitation, restriction, and cessation.

We want this information to be readily accessible to you and your office staff. You can locate this guide on the Internet at the AMA Web site (*www.ama-assn.org/go/olderdrivers*). Additional printed copies may also be ordered through the Web site.

Before you read the rest of the guide, you may wish to familiarize yourself with key facts about older drivers.

Older drivers: Key facts

Fact #1: The number of older adult drivers is growing rapidly and they are driving longer distances.

Life expectancy is at an all-time high[4] and the older population is rapidly increasing. By the year 2030, the population of adults older than 65 will more than double to approximately 70 million, making up 20 percent of the total U.S. population.[5] In many States, including Florida and California, the population of those over age 65 may reach 20 percent in this decade The fastest growing segment of the population is the 80-and-older group, which is anticipated to increase from about 3 million this year to 8 to 10 million over the next 30 years. We can anticipate many older drivers on the roadways over the next few decades, and your patients will likely be among them.

Census projections estimate that by the year 2020 there will be 53 million persons over age 65 and approximately 40 million (75%) of those will be licensed drivers.[6] The increase in the number of older drivers is due to many factors. In addition to the general aging of the population that is occurring in all developed countries, many more female drivers are driving into advanced age. This will likely increase with aging cohorts such as the baby boomers.

In addition, the United States has become a highly mobile society, and older adults are using automobiles for volunteer activities and gainful employment, social and recreational needs, and cross country travel. Recent studies suggest that older adults are driving more frequently, while transportation surveys reveal an increasing number of miles driven per year for each successive aging cohort.

Fact #2: Driving cessation is inevitable for many and can be associated with negative outcomes.

Driving can be crucial for performing necessary chores and maintaining social connectedness, with the latter having strong correlates with mental and physical health.[7] Many older adults continue to work past retirement age or engage in volunteer work or other organized activities. In most cases, driving is the preferred means of transportation. In some rural or suburban areas, driving may be the sole means of transportation. Just as the driver's license is a symbol of independence for adolescents, the ability to continue driving may mean continued mobility and independence for older drivers, with great effects on their quality of life and self-esteem.[8]

In a survey of 2,422 adults 50 and older, 86 percent of survey participants reported that driving was their usual mode of transportation. Within this group, driving was the usual method of transportation for 85 percent of participants 75 to 79, 78 percent of participants 80 to 84, and 60 percent of participant's 85 and older.[9] This data also indicates that the probability of losing the ability to drive increases with advanced age. It is estimated that the average male will have 6 years without the functional ability to drive a car and the average female will have 10 years.[10] However, our society has not prepared the public for driving

4. Centers for Disease Control and Prevention. 2008. National Center for Health Statistics. Accessed on December 14, 2008 at; *www.cdc.gov/nchs/PRESSROOM/07newsreleases/lifeexpectancy.htm*
5. U.S. Census Bureau, Healthy Aging, 2008. Accessed on December 14, 2008 at; *www.cdc.gov/NCCdphp/publications/aag/aging.htm*
6. U.S. Census Bureau. Projection of total resident population by 5-year age groups and sex with special age categories; middle series, 2016–2020. Washington, DC: Population Projections Program, Population Division, U.S. Census Bureau; 2000.
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cessation, and patients and physicians are often ill-prepared when that time comes.

Studies of driving cessation have noted increased social isolation, decreased out-of-home activities,[11] and an increase in depressive symptoms.[12] These outcomes have been well documented and represent some of the negative consequences of driving cessation. It is important for health care providers to use the available resources and professionals who can assist with transportation to allow their patients to maintain independence. These issues will be discussed further in subsequent chapters.

Fact #3: Many older drivers successfully self-regulate their driving behavior.

As drivers age, they may begin to feel limited by slower reaction times, chronic health problems, and effects from medications. Although transportation surveys over the years document that the current cohort of older drivers is driving farther, in later life many reduce their mileage or stop driving altogether because they feel unsafe or lose confidence. In 1990, males over 70 drove on average 8,298 miles, compared with 16,784 miles for men 20 to 24; for women, the figures were 3,976 miles and 11,807 miles, respectively.[13] Older drivers are more likely to wear seat belts and are less likely to drive at night, speed, tailgate, consume alcohol prior to driving, and engage in other risky behaviors. [14]

Older drivers not only drive substantially less, but also tend to modify when and how they drive. When they recognize loss of ability to see well after dark, many stop driving at night. There are data that suggest older women are more likely to self-regulate than men.[15] Others who understand the complex demands of left turns at uncontrolled intersections and their own diminished capacity forgo left-hand turns, and make a series of right turns instead. Self-regulating in response to impairments is simply a continuation of the strategy we all employ daily in navigating this dangerous environment—driving. Each of us, throughout life, is expected to use our best judgment and not operate a car when we are impaired, whether by fatigue, emotional distress, physical illness, or alcohol. Thus, self-awareness, knowledge of useful strategies, and encouragement to use them may be sufficient among cognitively intact older adults; however, this remains an important area for further study.

Older drivers may reduce their mileage by eliminating long highway trips. However, local roads often have more hazards in the form of signs, signals, traffic congestion, and confusing intersections. Decreasing mileage, then, may not always proportionately decrease safety risks.[16] In fact, the "low mileage" drivers (e.g., less than 3,000 miles per year) may actually be the group that is most "at-risk."[17]

Despite all these self-regulating measures, motor vehicle crash rates per mile driven begin to increase at age 65.[18] On a case-by-case level, the risk of a crash depends on whether each individual driver's decreased mileage and behavior modifications are sufficient to counterbalance any decline in driving ability. In some cases, decline—in the form of peripheral vision loss, for example—may occur so insidiously that the driver is not aware of it until he/she experiences a crash. In fact, a recent study indicated that some older adults do not restrict their driving despite having significant visual deficits.[19] Reliance on driving as the sole available means of transportation can result in an unfortunate choice between poor options. In the case of dementia, drivers may lack the insight to realize they are unsafe to drive.

In a series of focus groups conducted with older adults who had stopped driving within the past five years, about 40 percent of the participants knew someone over age 65 who had problems with his/her driving but was still behind the wheel.[20] Clearly, some older drivers require outside assessment and interventions when it comes to driving safety.

Fact #4: The crash rate for older drivers is in part related to physical and/or mental changes associated with aging and/or disease.[21]

Compared with younger drivers whose car crashes are often due to inexperience or risky behaviors,[22] older driver crashes tend to be related to inattention or slowed speed of visual processing.[23] Older driver crashes are often multiple-vehicle events that occur at intersections and involve left-hand turns. The crash is usually caused by the older driver's failure to heed signs and grant the right-of-way. At intersections with traffic signals, left-

11. Marottoli, R. A., de Leon, C. F. M., & Glass, T. A., et al. Consequences of driving cessation: decreased out-of-home activity levels. *J Gerontol Series B Psychol Sci Soc Sci.* 55:S334–340.
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23. Eberhard, J. W. Safe Mobility for Senior Citizens. International Association for Traffic and Safety Sciences Research. 20(1):29–37.

hand turns are a particular problem for the older driver. At stop-sign-controlled intersections, older drivers may not know when to turn.[24]

These driving behaviors indicate that visual, cognitive, and/or motor factors may affect the ability to drive in older adults. Research has not yet determined what percentage of older adult crashes are due to driving errors that are also common among middle-aged drivers, what proportion are due to age-related changes in cognition (such as delayed reaction time), or how many could be attributed to age-related medical illnesses. However, it is believed that further improvements in traffic safety will likely result from improving driving performance or modifying driving behavior.[25] The identification and management of diseases has a potential to maintain or improve driving abilities and road safety.

Fact #5: Physicians can influence their patients' decisions to modify or stop driving. They can also help their patients maintain safe driving skills.

Although older drivers believe that they should be the ones to make the final decision about driving, they also agree that their physicians should advise them. In a series of focus groups conducted with older adults who had given up driving, all agreed that the physicians should talk to older adults about driving, if a need exists. As one panelist put it, "When the doctor says you can't drive anymore, that's definite. But when you decide for yourself, there might be questions." While family advice had limited influence on the participants, most agreed that if their physicians advised them to stop and their family concurred, they would certainly retire from driving.[26] This is consistent with a recent focus group study with caregivers of demented drivers, who stated that physicians should be involved in this important decision-making process.[27]

Physicians assist their older patients to maintain safe mobility in two ways. They provide effective treatment and preventive health care, and they play a role in determining the ability of older adults to drive safely. Also, improved cardiovascular and bone health has the potential to reduce serious injuries and improve the rate of recovery in the event of a crash.

In many cases, physicians can keep their patients on the road longer by identifying and managing diseases, such as cataracts and arthritis, or by discontinuing sedating medications. Many physicians are aware of the literature on fall prevention, and that clinicians can reduce future risks of falls and fractures by addressing certain extrinsic (environmental) and intrinsic factors.[28] Driving abilities share many attributes that are necessary for successful ambulation, such as adequate visual, cognitive, and motor function. In fact, a history of falls has been associated with an increased risk of motor vehicle crash.[29]

Brief physician intervention on topics such as smoking and seat belt use has been shown to be effective. There is an assumption that doctors can and do make a difference by evaluating older individuals for medical fitness to drive. Furthermore, there is a crucial need to have this hypothesis studied systematically. To date, little organized effort in the medical community has been made to help older adults improve or maintain their driving skills. Research and clinical reviews on the assessment of older drivers have focused on screening methods to identify unsafe drivers and restrict older drivers. Physicians are in a position to identify patients at risk for unsafe driving or self-imposed driving cessation due to functional impairments, and address and help manage these issues to keep their patients driving safely for as long as possible.

Physicians must abide by State reporting laws. While the final determination of an individual's ability to drive lies with the driver licensing authority, physicians can assist with this determination. Driver licensing regulations and reporting laws vary greatly by State. Some State laws are vague and open to interpretation; therefore, it is important for physicians to be aware of their responsibilities for reporting unsafe patients to the local driver licensing authority. Information on State laws is provided in Chapter 8.

Thus, physicians can play a more active role in preventing motor vehicle crashes by assessing their patients for medical fitness to drive, recommending safe driving practices, referring patients to driver rehabilitation specialists, advising or recommending driving restrictions, and referring patients to State authorities when appropriate.

24. Preusser, D. F., Williams, A. F., Ferguson, S. A., Ullmer, R. G., & Weinstein, H. B. Fatal crash risk for older drivers at intersections. *Accid Anal Prev*. 30(2):151–159.
25. Lee, J. D. Fifty years of driving safety research. *Hum Factors*. 50: 521–528.
26. Persson, D. The elderly driver: deciding when to stop. *Gerontologist*. 1993;33(1):88–91.
27. Perkinson, M., Berg-Weger, M., Carr, D., Meuser, T., Palmer, J., Buckles, V., Powlishta, K., Foley, D., & Morris, J. Driving and dementia of the Alzheimer type: beliefs and cessation strategies among stakeholders. *Gerontologist*. 45(5):676–685.
28. Tinetti, M. E. Preventing falls in elderly persons. *N Engl J Med*. 348(1):42–49.
29. Margolis, K. L., Kerani, R. P., McGovern, P., et al. Risk factors for motor vehicle crashes in older women. *J Gerontol Series A Bio Sci Med Sci*. 57:M186–M191.

To achieve these ends, primary care physicians can follow the algorithm, *Physician's Plan for Older Drivers' Safety* (PPODS) (see Figure 1.1), which recommends that physicians:

- ***Screen*** *for red flags such as medical illnesses and medications* that may impair driving safety;
- ***Ask*** *about new-onset impaired driving behaviors* (see Am I a Safe Driver and How to Help the Older Driver in the appendices);
- ***Assess*** driving-related functional skills in those patients who are at increased risk for unsafe driving; for the functional assessment battery, Assessment of Driver Related Skills (ADReS), see Chapter 3;
- ***Treat*** any underlying causes of functional decline;
- ***Refer*** patients who require a driving evaluation and/or adaptive training to a driver rehabilitation specialist;
- ***Counsel*** patients on safe driving behavior, driving restrictions, driving cessation, and/or alternate transportation options as needed; and
- ***Follow-up*** with patients who should adjust their driving to determine if they have made changes, and evaluate those who stop driving for signs of depression and social isolation.

While primary care physicians may be in the best position to perform the PPODS, other clinicians have a responsibility to discuss driving with their patients as well. Ophthalmologists, neurologists, psychiatrists, physiatrists, orthopedic surgeons, emergency department and trauma center physicians, and other specialists all treat conditions, prescribe medications, or perform procedures that may have an impact on driving skills. When counseling their patients, physicians may wish to consult the reference list of medical conditions in Chapter 9.

In the following chapters, we will guide you through the PPODS and provide the tools you need to perform it. Before we begin, you may wish to review the AMA's policy on impaired drivers (see Figure 1.2).This policy can be applied to older drivers with medical conditions that impair their driving skills and threaten their personal driving safety.

Fact #6: Traffic safety for older drivers is a growing public health issue.

Older drivers are the safest drivers as an age group when using the absolute number of crashes per 100 licensed drivers per year.[30] However, the crash rate per miles driven reveals an increase at about age 65 to 70 in comparison to middle-aged drivers.[31] In 2000, 37,409 Americans died in motor vehicle crashes.[32] Of this number, 6,643 were 65 and older.[33] Accidental injuries are the seventh leading cause of death among older people and motor vehicle crashes are not an uncommon cause.[34] As the number of older drivers continues to grow, drivers 65 and older are expected to account for 16 percent of all crashes and 25 percent of all fatal crashes.[35]

Motor vehicle injuries are the leading cause of injury-related deaths among 65- to 74-year-olds and are the second leading cause (after falls) among 75- to 84-year-olds.[36] Compared to other drivers, older drivers have a higher fatality rate per mile driven than any other age group except drivers under 25.[37] On the basis of estimated annual travel, the fatality rate for drivers 85 and older is 9 times higher than the rate for drivers 25 to 69.[38] By age 80, male and female drivers are 4 and 3.1 times more likely, respectively, than 20-year-olds to die as a result of a motor vehicle crash.[39] There is a disproportionately higher rate of poor outcomes in older drivers, due in part to chest and head injuries.[40] Older adult pedestrians are also more likely to be fatally injured at crosswalks.[41]

There may be several reasons for this excess in fatalities. First, some older drivers are considerably more fragile. For example, the increased incidence of osteoporosis, which can lead to fractures, and/or atherosclerosis of the aorta which can predispose individuals to rupture with chest trauma from an airbag or steering wheel. Fragility begins to increase at age 60 to 64 and increases steadily with advancing age.[42] A recent study noted that chronic conditions are determinants of mortality and even minor injury.[43] As noted above, older drivers are also overrepresented in

(Continues on page 7)

30. CDC. (1997). Behavioral Risk Factor Surveillance System Survey Data. Atlanta: Centers for Disease Control and Prevention
31. Ball, K., Owsley, C., Stalvey, B., Roenker, D. L., & Sloane, M. E. Driving avoidance and functional impairment in older drivers. *Accid Anal Prev*. 30:313–322.
32. NHTSA. FARS. Web-Based Encyclopedia. *www-fars.nhtsa.dot.gov*.
33. Insurance Institute for Highway Safety. (2001). Fatality Facts: Elderly (as of October 2001). (Fatality Facts contains an analysis of data from U.S. Department of Transportation Fatality Analysis Reporting System.) Arlington, VA: Insurance Institute for Highway Safety.
34. Staats, D. O. Preventing injury in older adults. *Geriatrics*. 63:12–17.
35. Eberhard, J. Older drivers up close: they aren't dangerous. *Insurance Institute for Highway Safety Status Report* (Special Issue: Older Drivers). 36(8):1–2.
36. CDC. (1999). 10 Leading Causes of Injury Deaths, United States, 1999, All Races, Both Sexes. Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Data source: National Center for Health Statistics Vital Statistics System. Atlanta: Centers for Disease Control and Prevention.
37. NHTSA. Driver fatality rates, 1975-1999. Washington, DC: National Highway Traffic Safety Administration.
38. NHTSA. National Center for Statistics & Analysis. Traffic Safety Facts 2000: Older Population. DOT HS 809 328. Washington, DC: National Highway Traffic Safety Administration.
39. Evans, L. Risks older drivers face themselves and threats they pose to other road users. *Int J Epidemiol*. 29:315–322.
40. Bauza, G., Lamorte, W. W., Burke, P., & Hirsch, E. F. High mortality in elderly drivers is associated with distinct injury patterns: analysis of 187,869 drivers. *J Trauma Inj Infect Crit Care*. 64:304–310.
41. FHWA. (2007). Pedestrian Safety Guide and Countermeasres. PEDSAFE. 2007. Washington, DC: Federal Highway Administration. *www.walkinginfo.org/pedsafe/crashstats.cfm*. Accessed November 21, 2007.
42. Li, G., Braver, E., & Chen, L-H. Fragility versus excessive crash involvement as determinants of high death rates per vehicle mile of travel for older drivers. *Accid Anal Prev*. 35, 227–235.
43. Camiloni, L., Farchi, S., Giorgi Rossi, P., Chini, F., et al. Mortality in elderly injured patients: the role of comorbidities. *Int J Inj Control Safety Prom*. 15:25–31.

Figure 1.1 **Physician's Plan for Older Drivers' Safety (PPODS)**

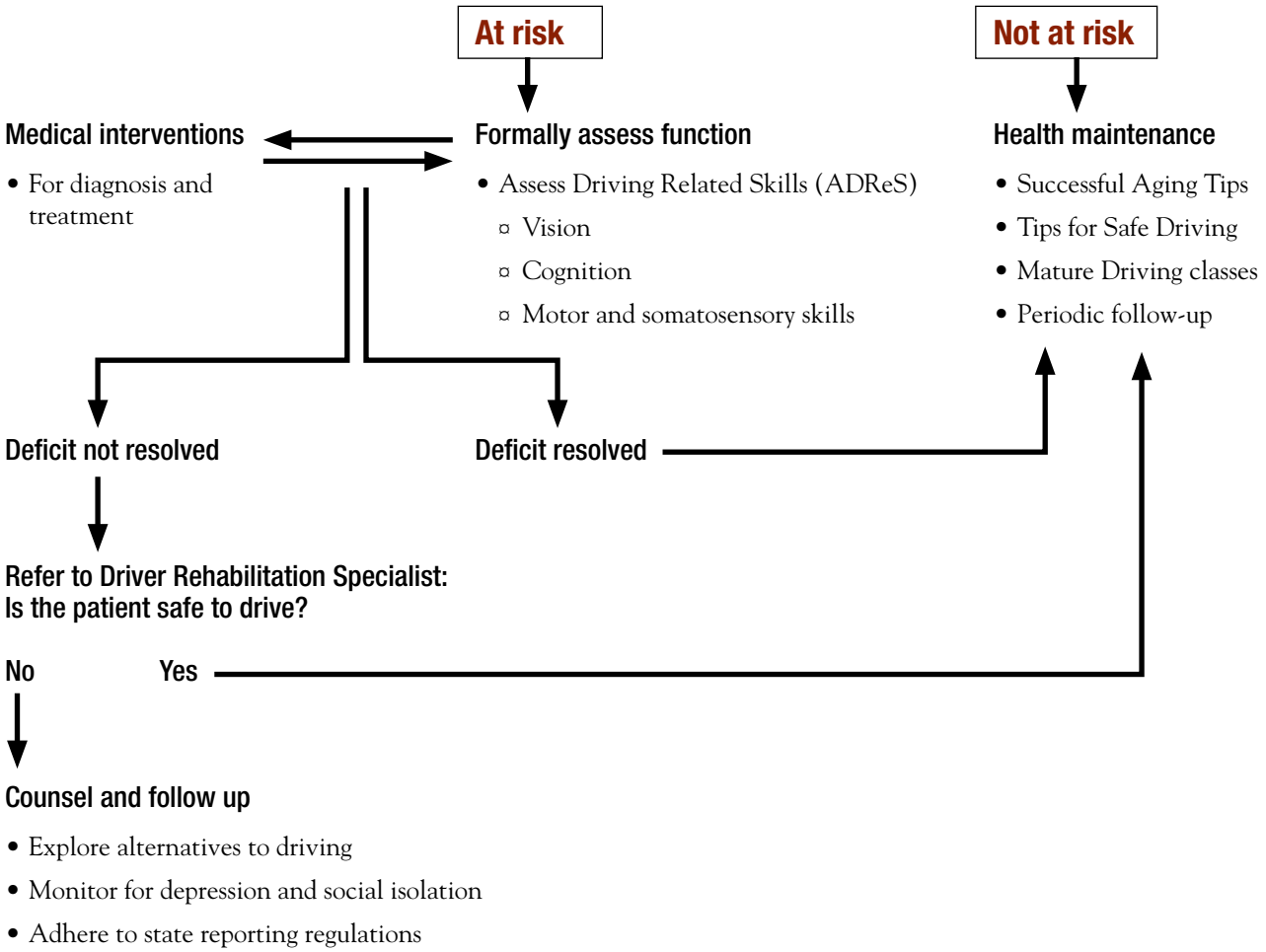
Is the patient at increased risk for unsafe driving?

Perform initial screen—

- Observe the patient
- Be alert to red flags
  - Medical conditions
  - Medications and polypharmacy
  - Review of systems
  - Patient's or family member's concern/ impaired driving behaviors

If screen is positive—

- Ask health risk assessment/social history questions
- Discuss alternatives to driving early in the process
- Gather additional information



left-hand-turn collisions, which cause more injury than more injury than rear-end collisions.[44] Finally, preliminary data from a Missouri study of medically impaired drivers who were in crashes indicate that the average age of the vehicle was more than 10 years and the cars often did not have air bags (personal communication, Tom Meuser, University of St. Louis-Missouri). If this latter observation is a contributing factor, improvement should occur as future cohorts of aging drivers purchase newer vehicles with improved crashworthiness.

Figure 1.2
AMA ethical opinion
E-2.24 Impaired drivers and their physicians

The purpose of this policy is to articulate physicians' responsibility to recognize impairments in patients' driving ability that pose a strong threat to public safety and which ultimately may need to be reported to the Department of Motor Vehicles. It does not address the reporting of medical information for the purpose of punishment or criminal prosecution.

1. Physicians should assess patients' physical or mental impairments that might adversely affect driving abilities. Each case must be evaluated individually since not all impairments may give rise to an obligation on the part of the physician. Nor may all physicians be in a position to evaluate the extent or the effect of an impairment (e.g., physicians who treat patients on a short-term basis). In making evaluations, physicians should consider the following factors: (a) the physician must be able to identify and document physical or mental impairments that clearly relate to the ability to drive; and (b) the driver must pose a clear risk to public safety.
2. Before reporting, there are a number of initial steps physicians should take. A tactful but candid discussion with the patient and family about the risks of driving is of primary importance. Depending on the patient's medical condition, the physician may suggest to the patient that he or she seek further treatment, such as substance abuse treatment or occupational therapy. Physicians also may encourage the patient and the family to decide on a restricted driving schedule, such as shorter and fewer trips, driving during non-rush-hour traffic, daytime driving, and/or driving on slower roadways if these mechanisms would alleviate the danger posed. Efforts made by physicians to inform patients and their families, advise them of their options, and negotiate a workable plan may render reporting unnecessary.
3. Physicians should use their best judgment when determining when to report impairments that could limit a patient's ability to drive safely. In situations where clear evidence of substantial driving impairment implies a strong threat to patient and public safety, and where the physician's advice to discontinue driving privileges is ignored, it is desirable and ethical to notify the Department of Motor Vehicles.
4. The physician's role is to report medical conditions that would impair safe driving as dictated by his or her State's mandatory reporting laws and standards of medical practice. The determination of the inability to drive safely should be made by the State's Department of Motor Vehicles.
5. Physicians should disclose and explain to their patients this responsibility to report.
6. Physicians should protect patient confidentiality by ensuring that only the minimal amount of information is reported and that reasonable security measures are used in handling that information.
7. Physicians should work with their State medical societies to create statutes that uphold the best interests of patients and community, and that safeguard physicians from liability when reporting in good faith. (III, IV, VII) Issued June 2000 based on the report "Impaired Drivers and Their Physicians," adopted December 1999.

44. IIHS. (2003). Fatality Facts: Older People as of November 2002. Arlington, Va: Insurance Institute for Highway Safety.

CHAPTER 2

Is the Patient at Increased Risk for Unsafe Driving?

CHAPTER 2

Is the Patient at Increased Risk for Unsafe Driving?

Mr. Phillips, a 72-year-old man with a history of hypertension, congestive heart failure, type 2 diabetes mellitus, macular degeneration, and osteoarthritis comes to your office for a routine check-up. You notice that Mr. Phillips has a great deal of trouble walking to the examination room, is aided by a cane, and has difficulty reading the labels on his medication bottles, even with his glasses. While taking a social history, you ask him if he still drives, and he states that he takes short trips to run errands, reach appointments, and meet weekly with his bridge club.

Mr. Bales, a 60-year-old man with no significant past medical history, presents at the emergency department with an acute onset of substernal chest pain. He is diagnosed with acute myocardial infarction. Following an uneventful hospital course, he is stable and ready to be discharged. On the day of discharge, he mentions that he had driven himself to the emergency department and would now like to drive himself home, but cannot find his parking voucher.

This chapter discusses the first steps of the *Physician's Plan for Older Drivers' Safety* (PPODS). In particular, we provide a strategy for answering the question, "Is the patient at increased risk for unsafe driving?" This part of the evaluation process includes your clinical observation, identifying red flags such medical illnesses and medications that may impair safe driving, and inquiring about new onset driving behaviors that may indicate declining traffic skills.

To answer this question, first—

Observe the patient throughout the office visit.

Careful observation is often an important step in diagnosis. As you observe the patient, be alert to:

- Impaired personal care such as poor hygiene and grooming;
- Impaired ambulation such as difficulty walking or getting into and out of chairs
- Difficulty with visual tasks; and
- Impaired attention, memory, language expression or comprehension.

In the example above, Mr. Phillips has difficulty walking and reading his medication labels. This raises a question as to whether he can operate vehicle foot pedals properly or see well enough to drive safely. His physical limitations would not preclude driving, but may be indicators that more assessment is indicated.

Be alert to conditions in the patient's medical history, examine the current list of medications, and perform a comprehensive review of systems.

When you take the patient's history, be alert to "red flags,"[45] that is, any medical condition, medication or symptom that can affect driving skills, either through acute effects or chronic functional deficits (see Chapter 9). For example, Mr. Evans, as described in Chapter 1, presents with lightheadedness associated with atrial fibrillation. This is a red flag, and he should be counseled to cease driving until control of heart rate and symptoms that impair his level of consciousness have resolved. Similarly, Mr. Bales' acute myocardial infarction is a red flag. Prior to discharge from the hospital, his physician should counsel him about driving according to the recommendations in Chapter 9 (see Figure 2.1).

Mr. Phillips does not have any acute complaints, but his medical history identifies several conditions that place him at potential risk for unsafe driving. His macular degeneration may prevent him from seeing well enough to drive safely. His osteoarthritis may make it difficult to operate vehicle controls or it may restrict his neck range of motion, thereby diminishing visual scanning in traffic. Questions in regard to his

45. Dobbs, B. M. (2005) Medical Conditions and Driving: A Review of the Literature (1960-2000). Report # DOT HS 809 690. Wahington, DC: National Highway Traffic Safety Administration. Accessed October 11, 2007. at *www.nhtsa.dot.gov/people/injury/research/Medical_Condition_Driving/pages/TRD.html*.

diabetes include: Does he have any end-organ damage such as sensory neuropathies, chronic cognitive decline, or fluctuations from stroke that may affect his ability to operate a motor vehicle? Could any of his medications impair driving performance?

Most older adults have at least one chronic medical condition and many have multiple conditions. The most common medical conditions in older adults include arthritis, hypertension, hearing impairments, heart disease, cataracts, dizziness, orthopedic impairments, and diabetes.[46] Some of these conditions have been associated with driving impairment and will be discussed in more detail in subsequent chapters. Additionally, keep in mind that many prescription and nonprescription medications have the potential to impair driving skills, either by themselves or in combination with other drugs. (See Chapter 9 for a more in-depth discussion on medications and driving.) Older patients generally take more medications than their younger counterparts and are more susceptible to their central nervous system effects. Whenever you prescribe one of these medications or change its dosage, counsel your patient on its potential to affect driving safety. You may also recommend that your patient undergo formal assessment of function (see Chapter 3) while he/she is taking a new medication that may cause sedation. Concern may be heightened if there are documented difficulties in attention or visuospatial processing speed (e.g., such as the Trails B test [see Chapters 3 and 4]).

The review of systems can reveal symptoms that may interfere with the patient's driving ability. For example, loss of consciousness, confusion, falling sleep while driving, feelings of faintness, memory loss, visual impairment, and muscle weakness all have the potential to endanger the driver.

At times, patients themselves or family members may raise concerns. If the family of your patient asks, "Is he or she safe to drive?" (or if the patient expresses concern), identify the reason for the concern. Has the patient had any recent crashes or near-crashes, or is he/she losing confidence due to declining functional abilities? Inquiring about specific driving behaviors may be more useful than asking global questions about safety. A list of specific driving behaviors that could indicate concerns for safety is listed in the Hartford guide, "At the Crossroads."[47] Physicians can request family members or spouses to monitor and observe skills in traffic with full disclosure and permission from the patient. Another tactic might be identifying a family member who refuses to allow other family members such as the grandchildren to ride with the patient due to traffic safety concerns.

Please note that age alone is not a red flag! Unfortunately, the media often emphasize age when an older driver is involved in an injurious crash. This "ageism" is a well-known phenomenon in our society.[48] While many people experience a decline in vision, cognition, or motor skills as they get older, people age at different rates and experience functional changes to different degrees. The focus should be on functional abilities and medical fitness-to-drive and not on age per se.

Inquire about driving during the social history/health risk assessment.

If a patient's presentation and/or the presence of red flags lead you to suspect that he/she is potentially at risk for unsafe driving, the next step is to ask whether he/she drives. You can do this by incorporating the following questions into the social history or health risk assessment (see Figure 2.2):

Figure 2.1
Counseling the driver in the inpatient setting

When caring for patients in the inpatient setting, it can be all too easy for physicians to forget about driving. In a survey of 290 stroke survivors who were interviewed 3 months to 6 years post-stroke, fewer than 35% reported receiving advice about driving from their physicians, and only 13% reported receiving any type of driving evaluation. While it is possible that many of these patients suffered such extensive deficits that both the patient and physician assumed that it was unlikely for the patient to drive again, patients should still receive driving recommendations from their physician.

Counseling for inpatients may include recommendations for permanent driving cessation, temporary driving cessation, or driving assessment and rehabilitation when the patient's condition has stabilized. Such recommendations are intended to promote the patient's safety and, if possible, help the patient regain his/her driving abilities.

Figure 2.2
Health risk assessment

A health risk assessment is a series of questions intended to identify potential health and safety hazards in the patient's behaviors, lifestyle, and living environment. A health risk assessment may include questions about, but not limited to:

- Physical activity and diet;
- Use of seat belts;
- Presence of smoke detectors and fire extinguishers in the home;
- Presence of firearms in the home; and
- Episodes of physical or emotional abuse.

The health risk assessment is tailored to the individual patient or patient population. For example, a pediatrician may ask the patient's parents about car seats, while a physician who practices in a warm-climate area may ask about the use of hats and sunscreen. Similarly, a physician who sees older patients may choose to ask about falls, injuries, and driving.

46. Health United States: 2002; Current Population Reports, American with Disabilities, p. 70–73.

47. The Hartford. At the Crossroads. Hartford, CT. *www.thehartford.com/alzheimers/brochure.html*. Accessed December 12, 2007.

48. Nelson, T. (2002). Ageism: Stereotyping and Prejudice Against Older Persons. Cambridge, MA: MIT Press.

- "How did you get here today?" or "Do you drive?"; and
- "Are you having any problems while operating a motor vehicle?";
- "Have others expressed concern about your driving?"; and
- "What would you do if you had to stop driving?"

If your patient drives, then his/her driving safety should be addressed. For acute illness, this generally involves counseling the patient. For example, Mr. Bales should be counseled to temporarily cease driving for a certain period of time after his acute myocardial infarction (see Chapter 9). If Mr. Phillips is started on a new medication, he should be counseled about the side effects and their potential to impair driving performance, if appropriate.

For **chronic** conditions, on the other hand, driving safety is addressed by formally assessing the functions that are important for driving. This assessment will be discussed further in the next chapter.

Please note that some chronic medical conditions may have both chronic and acute effects. For example, a patient with insulin-dependent diabetes may experience acute episodes of hypoglycemia, in addition to having chronic complications such as diabetic retinopathy and/or peripheral neuropathy. In this case, the physician should counsel the patient to avoid driving until acute episodes of hypoglycemia are under control and to keep candy or glucose tablets within reach in the car at all times. The physician should also recommend formal assessment of function if the patient shows any signs of chronic functional decline. (See Chapter 9 for the full recommendation on diabetes and driving.)

If your patient does not drive, you may wish to ask if he/she ever drove, and if so, what the reason was for stopping. If your patient voluntarily stopped driving due to medical reasons that are potentially treatable, you may be able to help her or him return to safe driving. In this case, formal assessment of function can be performed to identify specific areas of concern and serve as a baseline to monitor the patient's improvement with treatment. Referral to a driver rehabilitation specialist in these cases is strongly encouraged (see Chapter 5).

Gather additional information.

To gain a better sense of your patient as a driver, ask questions specific to driving. The answers can help you determine the level of intervention needed.

If a collateral source such as a family member is available at the appointment or bedside, consider addressing your questions to both the patient and the collateral source with the patient's permission. If this individual has had the opportunity to observe the patient's driving, his/her feedback may be valuable.

Questions to ask the patient and/or family member:

- "How much do you drive?" (or "How much does [patient] drive?")
- "Do you have any problems when you drive?" (Ask specifically about day and night vision, ease of operating the steering wheel and foot pedals, confusion, and delayed reaction to traffic signs and situations.)
- "Do you think you are a safe driver?"
- "Do you ever get lost while driving?"
- "Have you received any traffic violations or warnings in the past two years?"
- "Have you had any near-crashes or crashes in the past two years?"

Understand your patient's mobility needs.

At this time you can also ask about your patient's mobility needs and encourage him/her to begin exploring alternative transportation options before it becomes imperative to stop driving. **Even if alternative transportation options are not needed** at this point, it is wise for the patient to plan ahead in case it ever becomes necessary.

Some questions you can use to initiate this conversation include:

- "How do you usually get around?"
- "If your car ever broke down, how would you get around? Is there anyone who can give you a ride? Can you use a public train or bus? Does your community offer a shuttle service or volunteer driver service?"

Encourage your patients to plan a safety net of transportation options. You might want to say, "Mobility is very important for your physical and emotional health. If you were ever unable to drive for any reason, I'd want to be certain that you could still make it to your appointments, pick up your medications, go grocery shopping, and visit your friends."

Sources for educational materials are listed in Appendix B like the Hartford insurance company's "We need to talk," AARP materials, or University of Michigan Transportation Research Institute's materials[49], which could be invaluable in planning for maintaining out-of-home activities.[50] In the event that your patient must cease driving, the transition from driver to non-driver status will be less traumatic if he/she has already created a transportation plan. In addition the handout in Appendix B, *Getting By Without Driving*, can help your patient get started.

49. University of Michigan Transportation Research Institute. UMTRI Library; 2007. *www.umtri.umich.edu/pubsdata.php*. Accessed November 21, 2007.
50. The Hartford. Family Conversations With Older Drivers. Hartford, CT. *www.thehartford.com/talkwitholderdrivers/*. Accessed October 11, 2007.

Red Flags for Further Assessment

Acute events

Prior to hospital or emergency department discharge, patients and appropriate caregivers should be counseled as needed regarding temporary driving cessation:

- Acute myocardial infarction;
- Acute stroke and other traumatic brain injury;
- Arrhythmia;
- Lightheadedness and pre-syncope;
- Syncope and vertigo;
- Seizure;
- Surgery;
- Delirium from any cause; and
- New sedating medications.

Patient's or family member's concern

Has your patient approached you with the question, "Am I safe to drive?" (Alternatively, a family member may express concern about the patient's driving safety.) If so, find out the cause of concern. Note that age alone does not predict driving fitness—function, not age, is the determining factor. Ask for specific causes of concern, such as recent crashes, near-misses, traffic tickets, becoming lost, poor night vision, forgetfulness, and confusion. Evaluate for function using the Assessment of Driver Related Skills (ADReS) battery (Chapters 3 and 4).

Medical history: Chronic medical conditions

Patients may require formal assessment to determine the impact of these conditions on their level of function:

- *Diseases affecting vision*, including cataracts, diabetic retinopathy, macular degeneration, glaucoma, retinitis pigmentosa, field cuts, and low visual acuity even after correction;
- *Cardiovascular disease*, especially when associated with pre-syncope, syncope or cognitive deficits, including unstable coronary syndrome, arrhythmias, palpitations, congestive heart failure, hypertrophic obstructive cardiomyopathy, and valvular disease;
- *Neurologic disease*, including dementia, multiple sclerosis, Parkinson's disease, peripheral neuropathy, brain injury, spinal cord injury, and residual deficits from stroke;
- *Psychiatric disease*, including mood disorders, depression, anxiety disorders, psychotic illness, personality disorders, and alcohol or other substance abuse;
- *Metabolic disease*, including type 1 and type 2 diabetes mellitus especially with hypoglycemic attacks or severe swings in blood sugars, and hypothyroidism;
- *Musculoskeletal disabilities*, including arthritis and foot abnormalities;
- *Chronic renal failure*;
- *Respiratory disease*, including chronic obstructive pulmonary disease and obstructive sleep apnea; and
- *Cancer and chemotherapy*.

Medical history: Medical conditions with unpredictable/episodic events

The patient should be counseled not to drive during any of the following acute events until they have discussed this issue with their physician:

- Pre-syncope or syncope;
- Angina;
- Seizure;
- Transient ischemic attacks;
- Hypoglycemic attacks;
- Vertigo;
- Alcoholism and hospitalization for detoxification; or
- Sleep attacks or cataplexy.

Medications

Many nonprescription and prescription medications have the potential to impair driving ability, either by themselves or in combination with other drugs. Combinations of drugs may affect drug metabolism and excretion, and dosages may need to be adjusted accordingly. (See Chapter 9 for a discussion of each medication class.) Medications with strong potential to affect the patient's driving ability include:

- Anticholinergics;
- Anticonvulsants;
- Antidepressants;
- Antiemetics;
- Antihistamines;
- Antihypertensives;
- Antiparkinsonians;
- Antipsychotics;
- Benzodiazepenes and other sedatives/anxiolytics;
- Muscle relaxants;
- Narcotic analgesics; and
- Stimulants.

Review of systems

The review of systems can reveal symptoms or conditions that may impair driving performance. In addition to further work-up, driving safety should be addressed.

- **General:** fatigue, weakness;
- **Head Ears Eyes Nose Throat (HEENT):** headache, head trauma, double vision, visual changes, vertigo;
- **Respiratory:** shortness of breath, use of oxygen;
- **Cardiac:** chest pain, dyspnea on exertion, palpitations, sudden loss of consciousness;
- **Musculoskeletal:** muscle weakness, muscle pain, joint stiffness or pain, decreased range of motion;
- **Neurologic:** loss of consciousness, feelings of faintness, seizures, weakness/paralysis, tremors, loss of sensation, numbness, tingling; and
- **Psychiatric:** depression, anxiety, memory loss, confusion, psychosis, mania.

Assessment and plan

As you formulate a diagnosis/treatment plan for your patient's medical conditions, remember to address driving safety as needed. You may need to counsel your patients about driving when you:

- Prescribe a new medication, or change the dosage of a current medication; and
- Work up a new-onset disease presentation or treat an unstable medical condition. This includes many of the medical conditions listed above.

For recent reviews please consult the following two extensive reviews on these topics, both available on-line:

Dobbs, B. M. (2005) Medical Conditions and Driving: A Review of the Literature (1960-2000). Report # DOT HS 809 690. Washington, DC: National Highway Traffic Safety Administration. *www.nhtsa.dot.gov/people/injury/research/Medical_Condition_Driving/pages/TRD.html.*

Charlton, J., Koppel, S., O'Hare, M., Andrea, D., Smith, G., Khodr, B., Langford, J., Odell, M., & Fildes, B. (2004) Influence of chronic illness on crash involvement of motor vehicle drivers, Monash University Accident Research Centre, Report No. 213. *www.monash.edu/muarc/reports/muarc213.html*

CHAPTER 3

Assessing Functional Ability

CHAPTER 3

Assessing Functional Ability

Mr. Phillips, whom you met in Chapter 2, has been accompanied to the clinic by his son, who is in the examination room with him. Mr. Phillips tells you that he is a safe driver. You request and obtain permission to interview the son who voices his concern. Four months ago, Mr. Phillips was involved in a minor car crash, in which he was found to be at fault. He has also had several near-crashes in the past two years. However, he has never gotten lost while driving.

In discussing Mr. Phillips' transportation options, you learn that he drove himself to this appointment. Driving is Mr. Phillips' main mode of transportation, and he drives almost every day. Although Mr. Phillips is certain—and his son confirms—that family members and neighbors would be willing to drive him wherever he needs to go, he has never asked for rides. "Why should I ask for rides when I can just drive myself around? Besides, I don't want to impose on my family or friends."

As revealed in the PPODS algorithm (Figure 1.1), the next step to managing Mr. Phillips' driving safety is a formal assessment of the key functional abilities related to driving. Specific information in Mr. Phillips' driving history—namely, the crash, moving violations, or near crashes—in addition to his medical conditions, further support the need for an assessment.

In this chapter, we discuss the functions related to driving and present a brief office test battery, the *Assessment of Driving Related Skills* (ADReS). Each test in ADReS assesses a key area of function. Although not all functional domains that are necessary or relevant to driving are tested by the ADReS battery, many key areas are and have been validated with driving outcomes.

How do you broach the issue of a driving assessment to your patient?

Your patient may feel defensive about being assessed and may even refuse assessment for fear of being told that he/she can no longer drive. After all, driving is not only the primary form of transportation for most Americans, it also represents freedom and independence.

In suggesting assessment to your patient, it is best to use a direct but nonconfrontational approach. Reassure your patient that you have his/her safety in mind and emphasize that you would like to assist him/her to drive safely for as long as possible. If your patient expresses fear that you will "take away my driver's license," you may find it helpful to offer reassurance that physicians do not have that type of legal authority. Explain that you may advise evaluation of driving if needed and/or refer him/her to a driver rehabilitation specialist or the Department of Motor Vehicles (DMV).

Here is an example of how you could suggest an evaluation to Mr. Phillips:

"Mr. Phillips, I'm concerned about your safety when you drive. Your son tells me that you were in a car crash recently and that you've had several near crashes in the past two years. Even though your medical conditions are well managed, they can still cause problems that can affect your driving ability. I'd like you to do a few things for me, such as walking down the hall while I time you. These tests will help me decide if there are areas we need to work on to improve your driving safety.

"This is how it works: Based on what I know about your health and how you do on these tasks, we'll do our best to identify any potential treatable or reversible conditions. For example, if you're not seeing as well as you should, then we'll do what we can to improve your vision. If there's something we can't improve, then we can consult a driver rehabilitation specialist. This type of instructor, typically an occupational therapist, will go out on the road with you to watch you drive, then recommend ways to make your driving safer. The goal is to keep you on the road for as long as you are safe to drive."

What do you do if your patient refuses assessment?

Despite your best efforts, your patient may refuse to have his/her functional abilities that are key to driving assessed. If this occurs, you have several options:

- Encourage your patient to complete the self-screening tool (*Am I a Safe Driver?*) found in Appendix B. This may help raise your patient's level of awareness and make him/her more open to ADReS.
- Counsel your patient on the *Successful Aging Tips* and *Tips for Safe Driving*, both found in Appendix B. These may raise your patient's level of awareness and encourage safe driving habits.
- Suggest enrolling in a driving course designed to improve traffic safety, such as the Traffic Safety Course offered by AARP[51] or those offered by the AAA.[52] Roadwise Review is a CD available from the AAA that assesses important functional abilities for driving and provides feedback to older adults on the presence of impairment.[53] Roadwise Review does require the older adult to have a computer and an assistant during the playing of the CD. Give the patient a copy of the Driving Decisions Workbook. Developed by the University of Michigan Transportation Research Institute, this is a paper-and-pencil workbook that provides users with individualized feedback based on how they answer questions. Research has shown that workbook scores are positively correlated with on-road driving scores and several clinical tests of functional ability. The workbook can be downloaded free of charge at: *http://deepblue.lib.umich.edu/bitstream/2027.42/1321/2/94135.0001.001.pdf*.
- Suggest that the patient take the SAFER Driving survey. Also developed at the University of Michigan Transportation Research Institute, this is a Web-based tool (available at *um-saferdriving.org*) that requires users to answer questions about the severity of health concerns they are experiencing due to medical conditions and medications. The Web site then calculates the effects of these health concerns on critical driving skills and gives users individualized feedback on how their driving may be declining; what to do to continue driving safely given these declines; and, if appropriate, recommendations for more in-depth assessment. Research has shown that feedback from the Web site correlates positively with on-road driving scores and an assessment from an occupational therapist. Users also report that the site is easy to use, the information is helpful, and that they discovered declines in themselves of which they were not previously aware.[54]
- In the patient's chart, **document** your concern regarding his/her driving ability, and support this with relevant information from the patient's presentation, medical history, medications, and reported driving history. Document the patient's refusal for further assessment, along with any counseling you have provided. (Current Procedural Terminology [CPT®] codes for counseling can be found in Appendix A.) Not only will this remind you to follow-up at the next visit, but it could potentially protect you in the event of a lawsuit. (A detailed medicolegal discussion can be found in Chapter 7.) In cases where the risk is very high and the patient drives despite your recommendations, you might consider referral of the patient to the DMV for further testing.
- Follow-up at the patient's next appointment: Would he/she be willing to complete the self-screening? Has the patient put any of the tips into practice? Does the patient have any questions or concerns? Would he/she be willing to undergo ADReS?
- If family members are concerned about the patient's driving safety, you can give them a copy of *How to Assist the Older Driver*, found in Appendix B. Especially if the patient has dementia, he/she will probably lack insight and it will likely not be fruitful to belabor the point. It is important here to enlist family members and obtain their aid in creating a transportation plan for the patient and encouraging the patient to be evaluated by ADReS.
- If you are urgently concerned about your patient's driving safety, you may wish to forego ADReS and refer your patient directly to a driver rehabilitation specialist (see Chapter 5) or to your state DMV for a focused driving assessment. Depending on your State's reporting laws, you may be legally responsible for reporting "unsafe" drivers to the DMV. (A detailed discussion of the physician's legal responsibilities can be found in Chapter 7. A reference list of reporting laws is provided in Chapter 8.) In any case, the patient should be referred with his/her knowledge. At this point, the patient and/or family might relent and be willing to consider an evaluation from a driving rehabilitation specialist.

Assessment of Driving-Related Skills (ADReS)

The three key functions for safe driving are (1) vision, (2) cognition, and (3) motor/somatosensory function. ADReS assesses some aspects of these three important functions to help you identify specific areas of concern.

Please note that ADReS does **not** predict crash risk! While many researchers are working to create an easy-to-use test battery that predicts crash risk, further research is needed. However,

51. AARP Traffic Safety Course. *www.aarp.org/families/driver_safety/driver_safety_online_course.html*. Accessed October 14, 2007.
52. AAA Foundation for Traffic Safety Senior Driver Web site. *www.seniordrivers.org/home/index.cfm*. Accessed October 14, 2007.
53. AAA Exchange. Checking Your Driving Abilities. *www.aaapublicaffairs.com/Main/Default.asp?SectionID=&SubCategoryID=38&CategoryID=3&ContentID=315&*. Accessed October 14, 2007.
54. Eby, D. W., Molnar, L. J., Shope, J.T., & Dellinger, A.M. Development and pilot testing of an assessment battery for older drivers. J Safety Res 38: 535-43.

until physicians are able to test their patients *directly* for crash risk, they can test them *indirectly* by assessing the functions that are necessary for safe driving. Any impairment in these functions has the potential to increase the patient's risk for crash. Once they are identified, the physician is in a good position to determine if the patient requires referral to a specific subspecialist (e.g., ophthalmologist). Although cut-off scores are provided for these tests (see Chapter 4), the ADReS battery is a tool for identifying areas of concern that require additional evaluation. The physician should use his/her clinical judgment regardless of the scores by utilizing all available information (driving history, medical history, and functional assessment). In addition, not all important functions are tested on the ADReS battery; rather specific items were chosen for their applicability and feasibility in the office setting, along with their correlates with impaired driving outcomes.

The tests in ADReS were selected by a consensus panel of driving safety experts who worked with the AMA, and were chosen from among the many available functional tests based on their ease of use, availability, amount of time required for completion, and quality of information provided by the patient's test performance. The individual tests in ADReS have been validated as measures of their particular function and in some cases have been studied with relation to driving. Although we are still awaiting more evidenced-based medical studies to link these tests with crash risk, these screens can detect new-onset visual, cognitive, or motor problems that may be amenable to an intervention.

The tests are presented below by function, following a discussion of the function and how it relates to driving. An accompanying score sheet on pages 28–29 can be photocopied and placed in the patient's chart. On the score sheet, the tests are presented in the recommended order of execution. CPT® codes for components of ADReS are provided in Appendix A, and the score sheet can serve as documentation for these codes.

To perform ADReS, you will need a Snellen chart, tape to mark distances on the floor, a stopwatch, and a pencil. There are two paper-and-pencil tests in ADReS, one of which requires a preprinted form. This is included on pages 28–29 and may be photocopied.

Vision

Vision is the primary sense utilized in driving in comparison to other modalities like hearing and proprioception, and it is responsible for the majority of driving-related sensory input.[55] In most States, candidates are required to undergo vision testing to obtain a driver's license. Several States (see Chapter 8) also require vision testing at the time of license renewal.

Aspects of vision that are important for safe driving and can be readily assessed by a physician include:

- Visual acuity, and
- Visual fields.

Numerous studies show that visual acuity declines between early and late adulthood, although no consensus exists on the rate of decline or decade of onset. Decline in acuity is related to physiologic changes of the eye that occur with age and the increased incidence of diseases such as cataracts, glaucoma, and macular degeneration.[56] While far visual acuity is crucial to many driving-related tasks, declines in near visual acuity may be associated with difficulty seeing or reading maps, or gauges and controls inside the vehicle. In ADReS, far visual acuity is measured with a Snellen chart.

Visual fields may decline as a result of the natural aging process and medical conditions such as glaucoma, retinitis pigmentosa, and stroke. In addition, upper visual fields may be obstructed by ptosis, which is more common in the older population. Drivers with loss of peripheral vision (e.g., glaucoma) may have trouble noticing traffic signs or cars and pedestrians that are about to cross their path. Although earlier studies examining the relationship between visual field loss and driving performance were equivocal, more recent studies have found significant relationships.[57] In ADReS, visual fields are measured through confrontation testing.

Aspects of vision that are important for safe driving[58] but are not included in ADReS are:

- **Contrast sensitivity:** Older adults require about three times more contrast than young adults to distinguish targets against their background. This deficit in contrast sensitivity is further exacerbated by low light levels. Thus, older drivers may have problems distinguishing cars or pedestrians against background scenery, and this may be much worse at night or during storms.[59] While contrast sensitivity has been found to be a valid predictor of crash risk among older drivers,[60] most vision care specialists are not familiar with measures of contrast sensitivity, nor is it routinely measured in eye examinations. Further research must be performed to produce standardized, validated cut-off points for contrast sensitivity, and further work must be done to introduce this concept to professionals in eye care centers.

55. Shinar, D., & Schieber, F. (1991). Visual requirements for safety and mobility of older drivers. Hum Factors. 33(5):507-519.
56. Carr, D. B. Assessing older drivers for physical and cognitive impairment. Geriatrics. 1993;48(5):46-51.
57. Dobbs, B. M. (2001). Medical Conditions and Driving: Current Knowledge. Association for the Advancement of Automotive Medicine/ National Highway Traffic Safety Administration, p. 24 Project DTNH22-94-G-05297. Washington, DC: National Highway Traffic Safety Administration
58. Walgreens. *https://webapp.walgreens.com/cePharmacy/programsHTML/transportation-tech.pdf*. Accessed October 14, 2007.
59. Owsley, C., & Ball, K. Assessing visual function in the older driver. *Clin Geriatr Med.* 1993;9(2):389–401.
60. Dobbs, B. M. Medical Conditions and Driving: Current Knowledge. Association for the Advancement of Automotive Medicine/ National Highway Traffic Safety Administration, Project DTNH22-94-G-05297. Washington, DC: National Highway Traffic Safety Administration. 2001: p. 15–16.

Assessment of Driving-Related Skills (ADReS)

Snellen E chart

The Snellen chart is used to test far visual acuity. The standard chart measures 9" x 23" and is printed on a durable, tear-resistant latex sheet, with eyelets for easy hanging. Letters are printed on one side, and tumbling "E" symbols are printed on the reverse.

With the chart hanging on a wall, the patient is instructed to stand 20 feet away. Wearing his/her usual glasses or contact lenses, the patient reads the smallest line possible with both eyes open. The patient's visual acuity is based on the lowest full row that he/she successfully reads. For example, if the best the patient can see is 20/40, then his/her acuity is 20/40 OU (oculus uterque). This process is repeated for each eye individually (right eye: OD or oculus dexter; left eye: OS or oculus sinister).

This test is best performed in a hallway with good lighting. Tape can be used to mark a distance of 20 feet.

If you prefer, far visual acuity can be measured using the chart of your choice, such as the Snellen chart for a 10-foot distance or the Sloan low vision letter chart for 6 meters (20 feet).[1]

Near visual acuity can also be tested with commercially available charts, and should be considered whenever a patient complains of difficulty seeing or reading maps, or gauges and controls within the vehicle. Although not part of the ADReS battery, many clinicians will check near vision using a Rosenbaum pocket chart.

Some limitations have been noted in testing using the Snellen chart. These include—but are not limited to—the different number of letters per line, different spacing between lines, the specific use of letters, and the spacing between letters.[2] A trend in the field of eye care has been to use a newer chart called the ETDRS (Early Treatment Diabetic Retinopathy Study) that in some studies of eye diseases appears to be more accurate.[3] The ETDRS chart improves on the Snellen test by having a similar number of letters per line and standard spacing between the letters. Although it has not yet become the standard, it is possible that eye clinics will eventually migrate toward this eye chart. For physicians offices that are interested, ETDRS eye charts can be obtained from several sources and the stimuli presented in a variety of formats (e.g., wall chart, computer).

- **Accommodation and adaptation:** Accommodation is the change in the shape of the lens that assists with bringing objects into focus. This is an important skill for reading the instrument panel in a car or viewing objects in the mirror. Adaptation is the ability to perceive objects when levels of illumination are changing, as might occur during nighttime driving or in parking garages. Older adults require more time than young adults to adjust to abrupt changes in light or darkness. As a result, older drivers often report difficulties dealing with the sudden onset of bright lights, such as the headlights of an oncoming car. Glare may also play a role in their visual difficulties.[61]
- **Angular movement, dynamic visual acuity, and depth perception.** Older adults must be able to detect objects in motion such as judging the speed of cars coming across their path during left hand turns. This ties in with the concept of dynamic visual acuity, which may also require the detection of letters or images (such as reading traffic signs) while in motion. Depth perception is important for near objects, but apparently becomes less of an issue at further distances. A more pertinent task is the ability to detect changes in visual image size, such as judging the speed of approaching vehicles.
- **Color.** Many reviews on visual abilities that are necessary for driving tend to downplay the importance of color detection, based on the current level of evidence. Traffic lights in the United States typically have mixed colors embedded in the lights to compensate for the small percentage of the population that is red-green color blind. However, the ability to recognize traffic signs, which are given specific colors based on a specific regulatory area, is important. In addition, vehicle color may enhance or diminish detection under certain traffic conditions (e.g., a white car in snowy weather, or a grey car in rainy or foggy conditions).

1. Staplin, L., Lococo, K. H., Stewart, J., & Decina, L. E. (1999, April). Safe Mobility for Older People Notebook. NHTSA Report No. DOT HS 808 853. Washington, DC: National Highway Traffic Safety Administration.
2. Vector Vision. ETDRS Acuity Testing. *www.vectorvision.com/html/educationETDRSAcuity.html.* Accessed October 14, 2007.
3. Falkenstein, I. A., Cochran, D. E., Azen, S. P., et al. Comparison of visual acuity in macular degeneration: patients measured with Snellen and early treatment diabetic retinopathy study charts. *Ophthalmology.* 10:319–23.

61. Owsley, C., & Ball, K. Assessing visual function in the older driver. Clin Geriatr Med. 1993;9(2):389–401.

Cognition

Driving is a complex activity that requires a variety of high-level cognitive skills. Among the cognitive skills that are useful for driving[62] are:

- Memory—short-term, long-term, and working memory;
- Visual perception, visual processing, visual search, and visuospatial skills;
- Selective and divided attention;
- Executive skills (sequencing, planning, judgment, decision making);
- Language; and
- Vigilance.

Both crystallized memory and working memory are necessary for driving. Not only must drivers remember how to operate their vehicle and what signs and signals mean, they must also remember their current destination and how to get there.[63] In addition, drivers must be able to retain certain information while simultaneously processing other information—a skill called working memory. Working memory (and the other cognitive skills to which it contributes) tends to decline with age, while crystallized memory remains relatively intact across the life span. It is unclear at present whether age-related memory impairments reflect only preclinical forms of age-related diseases or whether these occur independent of disease processes.[64]

Visual perception, visual processing, and visuospatial skills are necessary for the driver to organize visual stimuli into recognizable forms and know where they exist in space. Without these skills, the driver would be unable to recognize a stop sign and determine its distance from the car. In general, visual process-

62. Walgreens. *https://webapp.walgreens.com/cePharmacy/programsHTML/transportation-tech.pdf*. Accessed October 14, 2007.
63. Colsher, P. L., & Wallace R. B. Geriatric assessment and driver functioning. Clin Geriatr Med. 1993;9(2):365–375.
64. Goetz, C. G. (1999). *Textbook of Clinical Neurology*, 1st ed. Philadelphia: W.B. Saunders Company.

ADReS (continued)

Visual fields by confrontation testing

The examiner sits or stands three feet in front of the patient, at the patient's eye level. The patient is asked to close his/her right eye, while the examiner closes his/her left eye. Each fixes on the other's nose.

The examiner then holds up a hand in each visual field simultaneously with a random number (usually one or two) of fingers in each of the four quadrants, and asks the patient to state the total number of fingers. With the fingers held slightly closer to the examiner, the patient has a wider field of view than the examiner. Provided that the examiner's visual fields are within normal limits, if the examiner can see the fingers, then the patient should be able to see them unless he/she has a visual field defect.

The process is repeated for the other eye (patient's left eye and examiner's right eye closed). The examiner indicates any visual field defects by shading in the area of defect on a visual field representation.

Trail-making test, part B

This test of general cognitive function also specifically assesses working memory, visual processing, visuospatial skills, selective and divided attention, and psychomotor coordination. In addition, numerous studies have demonstrated an association between poor performance on the Trail-Making Test, Part B, and poor driving performance.[1] (See Chapter 4 for further discussion.)

Part B involves connecting, in alternating order, encircled numbers (1–13) and encircled letters (A–L) randomly arranged on a page. This test is scored by overall time (seconds) required to complete the connections accurately. The examiner points out and corrects mistakes as they occur; the effect of mistakes, then, is to increase the time required to complete the test. This test usually takes 3 to 4 minutes to administer.

The examiner administers the test to the patient, stating, "Now I will give you a paper and pencil. On the paper are the numbers 1 through 13 and the letters A through L, scattered across the page. Starting with 1, draw a line to A, then to 2, then to B, and so on, alternating back and forth between numbers and letters until you finish with the number 13. I'll time how fast you can do this. Are you ready? Go." The examiner records time-to-complete.[2]

Although not recommended in the previous version of the ADReS battery, many neuropsychologists recommend giving the Trails A test (connecting just numbers) prior to giving the Trails B test. The rationale is at least twofold: (1) Trails A provides an appropriate warm-up to Trails B, and allows the older adult some practice on a simpler concept; and (2) in many of the driving studies that validated Trails B, Trails A was given first. For clinicians who prefer to conduct both tests, collaborating with a psychologist who uses the Trails A test (stimuli) can assist with administration and oversight in the office setting. However, the recent Maryland Pilot Older Driver Study (MaryPODS) that found an association with Trails B performance and at-fault crashes in a cohort of older adults utilized only the practice trial of Trails B prior to the full test. We have now included the practice trial of Trails B in the current stimuli of the ADReS battery.

1. Staplin, L., Gish, K. W., & Wagner, E. K. (2003). MaryPODS revisited: updated crash analysis and implications for screening program implementation. J Safety Res. 34:389–397.
2. Staplin, L., Lococo, K. H., Stewart, J., & Decina, L. E. (1999, April). Safe Mobility for Older People Notebook. NHTSA Report No. DOT HS 808 853. Washington, DC: National Highway Traffic Safety Administration.

ADReS (continued)

Clock drawing test

Depending on the method of administration and scoring, the clock drawing test (CDT) may assess a patient's long-term memory, short-term memory, visual perception, visuospatial skills, selective attention, abstract thinking, and executive skills. Preliminary research indicates an association between specific scoring elements of the clock drawing test and poor driving performance.[1]
(See Chapter 4 for a further discussion.)

In this form of the CDT, the examiner gives the patient a pencil and a blank sheet of paper and says, "I would like you to draw a clock on this sheet of paper. Please draw the face of the clock, put in all the numbers, and set the time to ten minutes after eleven." This is not a timed test, but the patient should be given a reasonable amount of time to complete the drawing. The examiner scores the test by examining the drawing for each of seven specific elements found on the ADReS score sheet (see page 28 for score sheet).[2]

Rapid pace walk

This is a measure of lower limb strength, endurance, range of motion, and balance. A 10-foot path is marked on the floor with tape. The subject is asked to walk the 10-foot path, turn around, and walk back to the starting point as quickly as possible. If the patient normally walks with a walker or cane, he/she may use it during this test. The total walking distance is 20 feet.

The examiner begins timing the patient when he/she picks up the first foot, and stops timing when the last foot crosses the finish mark. This test is scored by the total number of seconds it takes for the patient to walk 10 feet and back.[3]
In addition, the examiner should indicate on the scoring sheet whether the patient used a walker or cane. Scores greater than 9 seconds are associated with an increased risk of at-fault motor vehicle tasks.[4]

ing may slow[65] and complex visuospatial skills may decline with age, while visual perception remains stable.[66]

During driving, many demands are made on attention. In particular, drivers must possess selective attention—the ability to prioritize stimuli and focus on only the most important—in order to attend to urgent stimuli (such as traffic signs) while not being distracted by irrelevant ones (such as roadside ads). In addition, drivers must possess divided attention in order to focus on the multiple stimuli required by most driving tasks. Attentional functioning may decline with age,[67] with divided attention showing more pronounced changes than selective attention.[68]
The most widely studied instrument for detection of impairment in divided attention and selective attention that has been correlated with crash risk in older adult drivers has been the Useful Field of View (UFOV).[69] This test is available for purchase and information is available on the Visual Awareness Web site.[70] Cost, time, and ability to bill, as well as limited studies in a primary care setting, might be potential barriers to utilization in a physician's office. Another computerized set of tests that assesses key functional abilities for driving is the Driving Health© Inventory

1. Freund, B., Gravenstein, S., & Ferris, R. Use of the Clock Drawing Test as a Screen for Driving Competency in Older Adults. Presented at the American Geriatrics Society Annual Meeting, Washington, DC; May 9, 2002; and Personal correspondence with B. Freund dated September 16, 17 and 19, 2002.
2. Ibid.
3. Staplin, L., Lococo, K. H., Stewart, J., & Decina, L. E. (1999, April). *Safe Mobility for Older People Notebook*. NHTSA Report No. DOT HS 808 853. Washington, DC: National Highway Traffic Safety Administration.
4. Staplin, L., Gish, K. W., & Wagner, E. K. (2003). MaryPODS revisited: updated crash analysis and implications for screening program implementation. *J Safety Res*. 34:389–397.

65. Owsley, C., & Ball K. Assessing visual function in the older driver. *Clin Geriatr Med*. 1993;9(2):389–401.
66. Beers, M. H., & Berkow, R. (eds). (2000). *The Merck Manual of Geriatrics*. Section 4, Chapter 32: Aging and mental health. Whitehouse Station, NJ: Merck & Co., Inc..
67. Hartley, A. A. (1992). Attention. In: Craik, F. I. M., & Salthouse, T.A. (eds). *The Handbook of Aging and Cognition*. Pp. 3–50. Hillsdale, NJ: Erlbaum.
68. Madden, D. J., Turkington, T. G., Provenzale, J. M., Hawk, T. C., Hoffman, J. M., Coleman, R. E. (1997). Selective and divided visual attention: age-related changes in regional cerebral blood flow measured by H215O PET. *Hum Brain Mapp*. 5:389–409.
69. Ball, K., Roenker, D.L., Wadley, V.G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? *J Am Geriatr Soc*. 54:77–84.
70. Visual Awareness.com. *http://visualawareness.com/Pages/request.html*. Accessed October 14, 2007.

(DHI).[71] Similar to the ADReS battery, the program has not yet been validated in a large cohort of older adult drivers, but the subcomponents have been found to correlate with at-fault crash risk.[72] Furthermore, the DHI did appear to discriminate drivers with a history of a crash from those without crashes in a small cohort of drivers. In addition, this battery of tests appears feasible and acceptable to older drivers as a screen for functional impairments.[73]

Additional cognitive domains that have been linked with driving impairment include vigilance or sustained attention. Although many older drivers may make only short trips, some illnesses such as untreated obstructive sleep apnea cause persistent sleepiness or impaired attention. This risk would be present in this example regardless of the duration of the driving episode. In addition, many older adults travel long distances for vacations and to visit relatives, making the ability to sustain attention over time critical.

Language skills are necessary to read traffic signs and are critical in knowing the speed limit, identifying construction zones, and comprehending other important informational cues along the roadway. Geographic orientation refers to the skill of finding unfamiliar routes (e.g., map reading or using MapQuest) or knowing the way to familiar places. This skill likely involves executive function, short- and long-term memory, and language abilities. Impairment in these cognitive domains have not been well studied in regard to driving outcomes, but could play a role in accident causation in selected groups of medically impaired drivers.

71. DrivingHealth.com. DrivingHealth Inventory. *www.drivinghealth.com/screening.htm*, Accessed October 14, 2007.
72. Ball, K., Roenker, D.L., & Wadley, V.G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? *J Am Geriatr Soc*. 54:77–84.
73. Edwards J. D., Leonard K. M., & Lunsman M., et al. (2008). Acceptability and validity of older driver screening with the DrivingHealth, Inventory. *Accid Anal Prev*. 40: 1157–1163.

ADReS (continued)

Manual test of range of motion

The examiner tests the patient's range of motion by asking him/her to perform the requested motions bilaterally:

- Neck rotation: "Look over your shoulder like you're backing up or parking. Now do the same thing for the other side."
- Shoulder and elbow flexion: "Pretend you're holding a steering wheel. Now pretend to make a wide right turn, then a wide left turn."
- Finger curl: "Make a fist with both of your hands."
- Ankle plantar flexion: "Pretend you're stepping on the gas pedal. Now do the same for the other foot."
- Ankle dorsiflexion: "Point your toes towards your body."

The examiner scores the test by choosing the appropriate description of test performance: (1) Within normal limits; or (2) not within normal limits: good range of motion with excessive hesitation/pain or very limited range of motion.

Manual test of motor strength

The examiner tests the patient's motor strength by manually flexing/extending the patient's limbs, and asking him/her to resist the examiner's movements. The examiner should test bilateral:

- Shoulder adduction, abduction and flexion;
- Wrist flexion and extension;
- Hand-grip strength;
- Hip flexion and extension; and
- Ankle dorsiflexion and plantar flexion.[1]

Motor strength should be recorded on a scale of 0 to 5, as stated below:

Grade	Definition
5/5	Normal strength: movement against gravity with full resistance
4/5	Movement against gravity and some resistance
3/5	Movement against gravity only
2/5	Movement with gravity eliminated
1/5	Visible/palpable muscle contraction, but no movement
0/5	No contraction[2]

Strength that is slightly less than grade 5/5 but still greater than 4/5 may be recorded as 5^-/5. Similarly, strength that is slightly greater than 4/5 but still less than 5/5 may be recorded as 4^+/5. This applies to all other grades of strength as well.

1. Messinger-Rapport, B. J., & Rader E. (2000). High risk on the highway: how to identify and treat the impaired older driver. *Geriatrics*. 55(10):32–45.
2. Maxwell, R. W. (1996). *Maxwell Quick Medical Reference*, 3rd ed. Tulsa, OK: Maxwell Publishing Company, Inc.

Executive skills are required to analyze driving-related stimuli and formulate appropriate driving decisions. Executive skills allow a driver to appropriately make the decision to stop at a red light or at a green light if a pedestrian is in the path of the vehicle. The capacity for this kind of logical analysis tends to decline with age.[74]

Dementia and some medications' side effects in the older population may impact cognition. The fact that crashes involving older drivers commonly occur in complex situations in which task demand exceeds performance suggests that cognitive limitations may play a significant role in crash causation.[75]

In the ADReS battery, cognition is measured through the Trail-Making Test, Part B, and the Clock Drawing Test using Freund Scoring Criteria.

Motor and Somatosensory Function

Driving is a physical activity that requires motor and somatosensory abilities such as:

- Muscle strength and endurance;
- Range of motion of the extremities, trunk, and neck; and
- Proprioception.[76]

Motor abilities are necessary for operating vehicle controls appropriately and consistently and turning to view traffic. Even before driving, motor abilities are needed to enter the car safely and fasten the seat belt. The natural process of aging may involve a decline in muscle strength, muscle endurance, flexibility, and joint stability. (Whether proprioception changes appreciably with age has not been solidly established.[77]) Furthermore, osteoarthritis and other musculoskeletal problems are common in the elderly. Patients who suffer pain and limitations from these conditions may not only experience direct effects on their driving ability, but also decrease their physical activity, causing further decline in motor function.

Most of the difficulty in driving an automobile for patients with muscle or arthritic disorders involves difficulties with the use of seat belts and keys, adjusting seats and mirrors, using the pedals, steering, and transferring in and out of the car.[78] Several efforts have been made to correlate functional abilities, such as range of motion and muscle function, with driving. Driving impairment has been associated with the inability to reach above the shoulder.[79] Older adults with physical frailty may be at increased risk for a motor vehicle crash,[80,81] and studies have indicated they appear to be more vulnerable to injury.[82] Walking less than one block a day, impaired left knee flexion, and foot abnormalities have been associated with an adverse driving event.[83] Another study revealed that more difficulty walking one-quarter mile in comparison to a control group was associated with increase crash risk.[84] In ADReS, motor function is measured through the Rapid Pace Walk, Manual Test of Range of Motion, and Manual Test of Motor Strength measures.

74. Beers M. H., & Berkow R. (eds). (2000). *The Merck Manual of Geriatrics*. Section 4, Chapter 32: Aging and mental health. Whitehouse Station, NJ: Merck & Co., Inc.
75. Lundberg C., Hakamies-Blomqvist L., Almkvist O., & Johansson K. (1998). Impairments of some cognitive functions are common in crash-involved older drivers. *Accid Anal Prev*. 30(3):371–377.
76. Marottoli, R. A., & Drickamer M. A. (1993). Psychomotor mobility and the elderly driver. *Clin Geriatr Med*. 9(2):403–411.
77. Ibid.
78. Jones, J. G., McCann, J., & Lassere, M. N. (1991). Driving and arthritis. *Br J Rheumatol*. 30 361–364.
79. Hu Hu, P. S., Trumble, D. A., & Foley, D. J., et al. (1998). Crash risks of older drivers: a panel data analysis *Accid Anal Prev*. 30:569–581.
80. Sims, R. V., McGwin, G., & Allman, R. M., et al. (2000). Exploratory study of incident vehicle crashes among older drivers. *J Gerontol Series A Bio Sci Med Sci*. 55: M22–27.
81. Marottoli, R. A., Wagner, D. R., Cooney, L. M., & Tinetti, M. E. (1994). Predictors of crashes and moving violations among elderly drivers. *Ann Intern Med*; 121:842–846.
82. Kent, R., Funk, J., & Crandall, J. (2003). How future trends in societal aging, air bag availability, seat belt use, and fleet composition will affect serious injury risk and occurrence in the United States. *Traff Inj Prev*. 4: 24–32.
83. Marottoli, R. A., Wagner, D. R., Cooney, L. M., & Tinetti, M. E. (1994). Predictors of Crashes and Moving Violations Among Elderly Drivers. *Annals of Internal Medicine*, 121, 842–846.
84. Sims, R. V., McGwin, G., Pulley, L., et al. (2001). Mobility Impairments in Crash Involved Drivers. *J Aging Health*. 12:430.s.

ADReS score sheet

When administering the ADReS battery, you may find it helpful to use the *ADReS Score Sheet* which can be found at the end of this chapter. This form may be photocopied, filled out, and placed in the patient's chart. The *ADReS Score Sheet* presents the tests in the simplest order of administration and provides space for recording test results. We also recognize that these tests may not necessarily be performed by the physician but assigned to office staff such as the nurse or physician extender.

CPT® codes for components of the ADReS battery are provided in Appendix A, and the *ADReS Score Sheet* can serve as documentation for these codes.

Although you may administer the tests in the order you prefer, we recommend the following sequence:

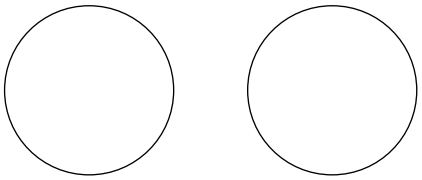
- Visual Fields by Confrontation Testing;
- Snellen E Chart—If your office has a long hallway, hang the chart at the end of the hallway and mark a 20-foot distance on the floor with tape. Have the patient stand at the tape.
- Rapid Pace Walk—Mark a 10-foot distance on the floor. With the patient already standing at the 20-foot mark, have him/her walk to the 10-foot mark, then back.
- Manual Test of Range of Motion—This is performed when the patient has returned to the examination room.
- Manual Test of Motor Strength;
- Clock Drawing Test—Ask the patient to turn over the Trail Making Test sheet and draw a clock on the blank side.
- Trail Making Test, Part B.

A discussion of these tests' efficacy, scoring, and recommended interventions based on performance is included in the next chapter.

Assessing Driving Related Skills (ADReS) Score Sheet

Patient's name:_____ **Date:** _____

1. **Visual fields:** Shade in any areas of deficit.



2. **Visual acuity:** _____OU _____ OS _____OU
   Was the patient wearing corrective lenses? If yes, please specify: _____
   If either eye acuity worse than 20/40, consider referral to ophthalmologist.

3. **Rapid pace walk:**_____ seconds
   (>10 secs, abnormal and consider referral for driving evaluation and/or evaluation of gait disorder) Was this performed with a walker or cane? If yes, please specify: _____

4. **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		

   Plan for any deficiencies (consider referral to OT/PT, address pain management, if indicated, and/or referral to driving clinic for vehicle modification)

5. **Motor strength:** Provide a score on a scale of 0–5.

	Right	Left
Shoulder adduction		
Shoulder abduction		
Shoulder flexion		
Wrist flexion		
Wrist extension		
Hand grip		
Hip flexion		
Hip extension		
Ankle dorsiflexion		
Ankle plantar flexion		

   Plan for any deficiencies: (consider referral to OT/PT or driving clinic for vehicle modification)

ADReS Score Sheet (continued)

Patient's name:_____ **Date:** _____

6. **Trail-Making Test, Part B:**____ seconds
(score greater than 180 secs abnormal, consider referral to driving evaluation clinic and/or work-up for cognitive/visual/motor impairment)

7. **Clock drawing test:** Please check 'yes' or 'no' to the following criteria

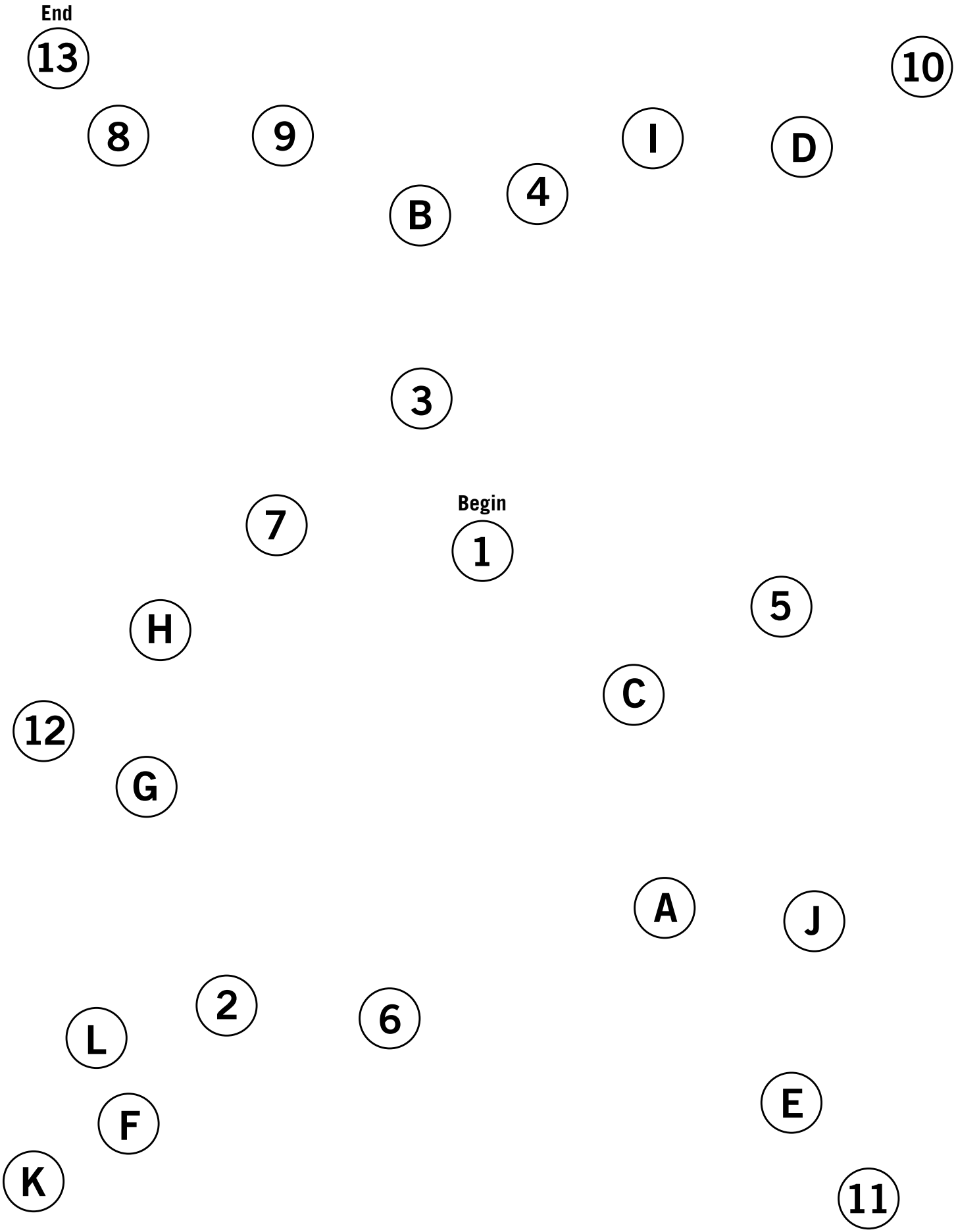
	Yes	No
Only the numbers 1-12 are included (no duplicates or omissions)		
The numbers are drawn inside the clock circle		
The numbers are spaced equally or nearly equally from each other		
The numbers are spaced equally or nearly equally from the edge of the circle		
One clock hand correctly points to 2		
There are only two clock hands		
There are no intrusive marks, writing or hands indicating incorrect time		

(any abnormal elements consider referral to driving evaluation clinic and/or work-up for cognitive/visual/motor impairment)

Assessment/Plan:

Trail-Making Test, Part B

Patient's name: _____ Date: _____



CHAPTER 4

Physician Interventions

CHAPTER 4

Physician Interventions

Despite your encouragement, Mr. Phillips (introduced in Chapter 2) hesitates to take the* Assessment of Driver Related Skills *(ADReS) battery because he says, "I don't see the need for it." You reiterate your concerns for his safety, and give him a copy of the* Am I a Safe Driver? *self-assessment handout to take home. In addition, you counsel Mr. Phillips on the* Successful Aging Tips and Tips for Safe Driving *handouts. Mr. Phillips agrees to allow his son to observe his driving, and you give the son the* How to Assist the Older Driver *handout (see Appendices). You document all of this in Mr. Phillips' chart and schedule a follow-up visit. Alternatively, the Hartford guide "*At the Crossroads*" has a driving behavior checklist that could be filled out by family members (p.11).[85] Although not systematically studied, this type of objective evaluation could also be revealing.

At Mr. Phillips' next visit, you ask him if he has tried putting any of the* Tips for Safe Driving *into practice. He admits that he had another close call, and his son states he observed several driving errors. These motivated Mr. Phillips to complete the self-assessment. He claims that the self-assessment was an eye-opening experience, and he is now willing to undergo ADReS.

On the ADReS battery, Mr. Phillips takes 11 seconds to perform the Rapid Pace Walk. His visual acuity is 20/50 OD and 20/70 OS. His motor strength is 4-/5 in both lower extremities, and 4/5 in both upper extremities. He has limited range of motion on neck rotation; ankle plantar flexion and dorsiflexion are within normal limits. It takes him 182 seconds to complete the Trail-Making Test, Part B, and his clock drawing is scored as "normal" for all seven criteria.

Now that Mr. Phillips has undergone ADReS, what does his performance indicate? In this chapter, we help you interpret your patient's test performance by providing you with scoring cut-offs.[86] We have also provided examples of interventions to help you manage and treat any functional deficits that are identified through ADReS. Recently, the ADReS battery has been shown to have high levels of inter-rater reliability.[87]

As you review the recommended interventions, remember that the goal of physician evaluation is to identify, correct, or stabilize any functional deficits that may impair the patient's driving performance and refer to a driver rehabilitation specialist (DRS), if appropriate (for more details, see Chapter 5).

Visual acuity

Although many States currently require far visual acuity of 20/40 for an unrestricted license, there is a paucity of evidence that links static visual acuity to crash risk. In fact, studies undertaken in some States have demonstrated that there is no increased crash risk between 20/40 and 20/70, resulting in several new State requirements.[88] However, some studies have found that those States that require visual testing during license renewal for older adults have lower crash rates.[89, 90]

General recommendations on visual acuity and driving are stated below. Please note that these recommendations are subject to each State's licensing requirements.

For visual acuity greater than 20/40 (e.g., more impaired), the physician should:

- Ensure that the underlying cause of vision loss is adequately treated, if treatment is possible. If the patient is not currently under the care of an ophthalmologist or optometrist, referral is recommended.
- Recommend that the patient has and uses the appropriate glasses or contact lenses. Again, if the patient is not currently under the care of a specialist, referral is recommended.

85. The Hartford. Alzheimers, Dementia & Driving. Hartford, CT. *www.thehartford.com/alzheimers/brochure.html.* Accessed October 24, 2007.

86. Please be aware that the recommendations stated in this chapter are subject to your State's reporting laws and DMV requirements.

87. Posse, C., McCarthy, D. P., & Mann, W. C. (2006). A pilot study of interrater reliability of the assessment of driving-related skills: Older Driver Screening Tool. *Top Geriatr Rehab The Older Driver, Part 2.* 22: 113–120.

88. American Academy of Ophthalmology. Policy Statement: Vision Requirements for Driving. Approved by Board of Trustees, October 2001.

89. Levy, D. T. (1995). The relationship of age and State license renewal policies to driving licensure rates. *Accid Anal Prev.* 27(4):461–467.

90. Shipp, M. D. (1998). Potential human economic cost-savings attributable to vision testing policies for driver license renewal, 1989–1991. *Optom Vis Sci.* 75:103–118.

- Recommend that the patient reduce the impact of decreased visual acuity by restricting travel to low risk areas and conditions (e.g., familiar surroundings, non-rush hour traffic, low speed areas, daytime, and good weather conditions).
- Be aware that the patient may require more frequent (e.g., yearly) assessment of visual acuity to detect further visual decline caused by chronic, progressive diseases.

For visual acuity less than 20/70 (e.g., more impaired), the physician should:

- Follow the recommendations stated above, and
- Recommend an on-road assessment performed by a DRS to evaluate the patient's performance in the actual driving task, where permitted and available (see Chapter 5).

For visual acuity less than 20/100 (e.g., more impaired), the physician should:

- Follow the recommendations stated above, and
- Recommend that the patient not drive unless safe driving ability can be demonstrated in an on-road assessment performed by a DRS, where permitted and available.

Visual fields

Research shows that visual field loss can significantly affect driving safety. In examining 10,000 volunteer California license applicants, Johnson and Keltner found significant deterioration in visual fields among drivers over age 60. In addition, they found that drivers with binocular visual field loss had driving crash and conviction rates more than twice as high as age- and gender-matched drivers with normal fields.[91] Recently, studies focused on a more homogenous group of older adults with a specific disease (e.g., glaucoma) that is known to impair visual fields have found correlation with increased crash risk in patients with moderate to severe field defects.[92, 93]

While it is known that an adequate visual field is important for safe driving, there is no conclusive evidence to define what is meant by "adequate." Most likely, this varies widely from patient to patient and may depend on the presence of other co-morbidities. For example, a driver with a restricted visual field but excellent scanning ability may drive as safely as a driver with an unrestricted visual field but poor neck rotation.[94]

General recommendations on visual field and driving are stated below. Physicians should be aware of their States' specific visual field requirements, if any, and adhere to them.

For visual field defects noted on clinical examination, the physician should:

- Ensure that the underlying cause of visual field loss is adequately treated, if treatment is possible. If the patient is not currently under the care of an ophthalmologist or optometrist, referral is recommended.
- Automated visual field testing may help define the extent of the defect, and ophthalmologists have a number of useful instruments for measuring visual fields.
- For binocular visual field of questionable adequacy (as deemed by clinical judgment), an on-road assessment performed by a DRS is strongly recommended. Through driving rehabilitation, the patient may learn how to compensate for decreased visual fields. In addition, the DRS may prescribe enlarged side- and rear-view mirrors as needed and train the patient in their use.
- Be aware that the patient may require re-testing of visual fields in the future for visual field defects caused by chronic, progressive diseases.

Cognition

Although the following cognitive tests are scored separately, interventions are recommended if the patient reaches designated cut-off values (as described below) on either of them.

Trail-Making Test, Part B

A time for completion of greater than 3 minutes (180 seconds) signals a need for intervention,[95] such as a review of causes for the abnormal result (e.g., dementia, sedating medication) and/or referral to a DRS.

Numerous studies have demonstrated an association between performance on the Trail-Making Test, Part B (TMT-B), and cognitive function and/or driving performance. In a study of 1,700 drivers 65 and older who were applying for renewal of their North Carolina driver's license, TMT-B test results were strongly associated with recent prior crash involvement.[96] A study of 105 drivers in Nebraska 65 to 88 years old showed that on-road driving performance significantly correlated to TMT-B performance (correlation coefficient -0.42).[97] Most recently, data from the Maryland

91. Johnson, C. A., & Keltner, J. L. (1983). Incidence of visual field loss in 20,000 eyes and its relationship to driving performance. *Arch Ophthalmol*. 101:371–375.
92. Szlyk, J. P., Mahler, C. L., Seiple, W., et al. (2005). Driving performance of glaucoma patients correlates with peripheral visual field loss. *J Glaucoma*. 14:145–150.
93. McGwin, G., Jr., Mays, A., Joiner, W., et al. (2004). Is glaucoma associated with motor vehicle collision involvement and driving involvement and driving avoidance? *Invest Ophthalmol Vis Sci*. 45: 3934–3939.
94. American Academy of Ophthalmology. Policy Statement: Vision Requirements for Driving. Approved by Board of Trustees, October 2001.
95. Staplin, L., Lococo K.H., Gish K.W., & Decina L.E. (2003). Model driver screening and evaluation program & Maryland pilot older driver study. NHTSA Report Number DOT HS 809 581. Washington, DC: National Highway Traffic Safety Administration.
96. Stutts, J. C., Stewart, J. R., & Martell C. (1998). Cognitive test performance and crash risk in an older driver population. *Accid Anal Prev*. 30(3):337–346.
97. Tarawneh, M. S., McCoy, P. T., Bishu, R. R., Ballard, J. L. (1993). Factors associated with driving performance of older drivers. *Transportation Res Record*. 1405:64–71.

Pilot Older Driver Study[98] demonstrated a significant correlation between TMT-B performance and future at-fault crash in the license renewal sample.

Clock Drawing Test, Freund Clock Scoring for Driving Competency

Any incorrect or missing element on the Freund Clock Scoring Criteria signals a need for intervention, such as a review of causes for the abnormal result (e.g., dementia) and/or referral to a DRS.

Clock Drawing Tests (CDT) have been found to correlate significantly with traditional cognitive measures, and to discriminate healthy individuals from those with dementia.[99] Of all the measures that have correlated with impaired driving performance in older adults with dementia, tests of visuospatial skill ability have had the highest level of prediction.[100] Several versions of the CDT are available, each varying slightly in the method of administration and scoring.[101] The Freund Clock Scoring is based on seven "principal components" (as outlined on the ADReS Score Sheet), which were derived by analyzing the clock drawings of 88 drivers 65 and older against their performance on a driving simulator.[102] Errors on these principal components correlated significantly with specific hazardous driving errors, signaling the need for formal driving evaluation.

It is again emphasized that these tests should not be the sole determinant as to whether an older adult should drive, and this was the conclusion of a recent review on this subject.[103] However, impairments on these tests are associated with increased risk, and referral for further evaluation, such as performance-based road testing, should be considered. In addition, it is unlikely that future fitness-to-drive evaluations will rely on one test but likely will employ a battery of tests.[104]

If the patient's performance warrants interventions, the physician should:

- Gather (or refer for) more information to include detailed history and examination of cognitive and functional abilities, as needed;
- Identify or interview a reliable informant (e.g., family member or caregiver) who can assist with the evaluation;
- Identify the cause of the cognitive decline;
  - Check for reversible causes of cognitive decline;[105]
  - Screen for depression;[106]
  - Review the patient's medication regimen and the side effects of the medications, and question the patient about the onset of cognitive decline in conjunction with new medications or dosage changes. Your patients may be unaware of the potential effects of polypharmacy on cognitive ability and driving.
- If possible, treat the underlying disorder and/or adjust the medication regimen as needed. Remember, it is critical that every patient have a complete evaluation to identify the underlying cause or causes and receive proper treatment.
- Refer the patient to a neurologist, psychiatrist, or neuropsychologist for diagnosis or treatment as needed. If the patient has a degenerative dementia, such as Alzheimer's disease, begin treatment with appropriate medications as indicated.
- Recommend an on-road assessment performed by a DRS to assess the patient's performance in the actual driving task. An initial comprehensive on-road assessment with retesting at regular intervals is particularly useful for progressive dementing illnesses. Strongly recommend that the patient begin exploring alternative forms of transportation now, and encourage him/her to involve family members/caregivers in these discussions.

98. Ball, K. K., Roenker, D. L., Wadley, V. G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? *J Am Geriatr Soc*. 54:77–84.
99. Royall, D. R., Cordes, J. A., & Polk, M. J. (1998). Clox: An executive clock drawing task. *J Neurol Neurosurg Psychiatry*. 64:588–594.
100. Reger, M. A., Welsh, R. K., Watson, G. S., et al. (2004). The relationship between neuropsychological functioning and driving ability in dementia: a meta-analysis. *Neuropsychology*. 18:85–93.
101. Royall, D. R., Mulroy, A R., Chiodo, L K., Polk, M J. (1999). Clock drawing is sensitive to executive control: a comparison of six methods. *J Gerontol Psychol Sci*. 54B(5):328–333.
102. Freund, B., Gravenstein, S., Ferris, R., et al. (2005). Drawing clocks and driving cars. *J Gen Intern Med*. 20:240–244.
103. Langford, J. (2008). Usefulness of off-road screening tests to licensing authorities when assessing older driver fitness to drive. *Traffic Inj Prev*. 9:328–335.
104. Stave, W. B., Justiss, M. D., McCarthy, D. P., et al. (2008). Predictability of clinical assessments for driving performance. *J Safety Res*. 39:1–7.
105. Based on history, examination, and cognitive testing, order laboratory tests as needed to evaluate for causes of cognitive decline: CBC for anemia or infection; comprehensive metabolic profile for electrolyte imbalance and renal function; finger stick for blood sugar, pulse oximetry for hypoxia, TSH for hypothyroidism; liver function tests; vitamin B12 and folate for vitamin deficiency, and based on the prior probability, noncontrast CT or MRI scan.
106. Knopman, D. S. (2001). Practice parameter: diagnosis of dementia (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 56(9):1143–1153.

Motor ability

Although the following tests are scored separately, interventions are recommended if the patient reaches designated cut-off values (as described below) on any of the individual tests.

Rapid Pace Walk

A time for completion of greater than 9 seconds signals a need for intervention,[107] such as determination of the cause for slowed gait speed (e.g., Parkinson's disease) and/or referral to a DRS.

The Rapid Pace Walk assesses lower limb mobility, trunk stability, and balance. In a prospective cohort study of 283 drivers 72 and older, subjects who took longer than 7 seconds to complete the test were twice as likely to experience an adverse traffic event (crash, violation, or being stopped by the police) in the year following the test.[108] More recently, data from the Maryland Pilot Older Driver Study—a study of almost 2,000 drivers over age 55 who were license renewal applicants--demonstrated a correlation between performance on the Rapid Pace Walk and future at-fault crash in the license renewal sample (odds ratio 1.70).[109]

Manual Test of Motor Strength

Less than grade 4/5 strength in either upper extremity or the right lower extremity signals a need for intervention, such as vehicle modification. (If the patient drives a vehicle with manual transmission or reports using both feet to operate the brake and accelerator pedals,[110] this applies to the left lower extremity as well.)

(Continues on next page)

107. Staplin, L., Gish, K. W., & Wagner, E. K. (2003). MaryPODS revisited: updated crash analysis and implications for screening program implementation. *J Safety Res*. 34:389–397.

108. Marottoli, R. A., Cooney, L. M., Wagner, R., Doucette, J., & Tinetti, M. E. (1994). Predictors of automobile crashes and moving violations among elderly drivers. *Ann Intern Med*. 121(11):842–846.

109. Ibid.

110. Although this is not considered the recommended way of driving, many older drivers initially learned to drive using both feet to operate the pedals.

Figure 4.1: Dementia and driving

We encourage all physicians to pursue a diagnosis of dementia. Dementia is one of the most serious disorders in the older population, and affects 4 to 5 million persons in the United States.[1] However, it is frequently unrecognized and undocumented by primary care physicians[2]—a situation that is particularly unfortunate since early treatment and planning may stabilize or slow the course of the disease, improve the safety and comfort of the patient, and reduce caregiver stress.

With regard to driving, patients with progressive dementia ultimately become unsafe to drive, yet often lack the cognitive abilities to be aware of their limitations. When it becomes unsafe for these patients to drive, it frequently falls on family members and caregivers to enforce driving cessation and arrange alternative forms of transportation. With early diagnosis, patients and their families have the opportunity to plan ahead for a smooth transition from driving to non-driving status. Valuable information about an individual's driving ability may come from observations of informants. (For a more detailed discussion of driving cessation and the dementia patient, see Chapter 6. Several recent reviews in the literature on this topic also may be helpful to the clinician.[3, 4])

Figure 4.2: The copilot phenomenon

Copiloting refers to a situation in which an individual drives with the assistance of a passenger who provides navigational directions and instructions on how to drive. Patients with dementia may rely on passengers to tell them where to drive and how to respond to driving situations, while patients with vision deficits may ask passengers to alert them to traffic signs and signals.

The use of copilots is not rare. In a study of the prevalence and cessation of driving among older men with dementia, about 10 percent of the 59 subjects who were still driving relied on copilots.[5] Patients should be advised to not continue driving unless they are capable of driving safely without the use of a copilot. In many traffic situations, there is insufficient time for the copilot to detect a hazard and alert the driver, and for the driver to then respond quickly enough to avoid a crash. In such situations, the driver places not only him/herself in danger, but also the copilot and other passengers. Furthermore, the use of copilots to meet standards for licensure raises questions of who, exactly, is licensed to drive; how the presence of the copilot can be ensured; and what standards for medical fitness-to-drive should be applied to the copilot.[6]

Patients who are not safe to drive should be recommended to stop driving, regardless of their need or use of a copilot. Copilots should never be recommended to unsafe drivers as a means to continue driving. Instead, efforts should focus on helping the patient find safe transportation for him/herself and the family members who may depend on them. Conversely, some safe drivers feel more comfortable driving with a passenger to give them company and help with navigation. While using a passenger to assist as a copilot with navigation is an acceptable practice, use of a copilot to provide instruction on how to drive is not recommended. As long as these drivers have the ability to drive safely on their own, passenger assistance is an acceptable and advisable practice.

1. Beers, M.H., &Berkow, R. (2000). The Merck Manual of Geriatrics. Section 5, Chapter 40. Whitehouse Station, NJ: Merck & Co., Inc.

2. Valcour, C. G., Masaki, K. H., Curb, J. D., & Blanchette, P. L. The detection of dementia in the primary care setting. *Arch Intern Med*. 160:2964–2968.

3. Brown, L. B., & Ott, B. R. (2004). Driving and dementia: a review of the literature. *J Geriatr Psychiatry Neurol*. 17:232–240.

4. Carr, D. B., Duchek, J. M., Meuser, T. M., et al. (2006). Older adult drivers with cognitive impairment. *Am Fam Physician*. 73:1029–1034.

5. Foley, D. J., Masaki, K. H., Ross G. W., &Whwite L. R. (2000). Driving cessation in older men with dementia. *J Am Geriatr Soc*. 48(8):928–930.

6. Fox, G. F., & Bashford, G. M. (1997). Dementia and driving: balancing personal independence and public safety. *Med J Australia*. 167:406–407.

The manual test of motor strength evaluates separate muscle groups in both the upper and lower limbs. The U.S. Public Health Service guidelines on musculoskeletal ability and driving state that a driver should have at least grade 4/5 strength in the right lower extremity and both upper extremities.[111] The physician should also be aware that the amount of strength required for safe driving may depend on the vehicle driven by the patient. For example, a patient who drives an older car that does not have power steering or operates a large vehicle (e.g., a school bus, which is not uncommon for retirees) may require greater strength to safely drive the vehicle.

Manual Test of Range of Motion

If the patient's range of motion is not within normal limits (i.e., if the patient has a good range of motion with excessive hesitation/pain or a very limited range of motion), this signals the need for intervention. Recently, the inability to recognize an object that is presented directly behind a patient (e.g., intact cervical range of motion) was correlated with increased risk of a motor vehicle crash.[112]

Scoring for range of motion is based on simple dichotomous outcomes (normal vs. impaired), and this is due to several reasons: (1) Physicians are not usually trained in use of goniometers nor have the devices in the office setting; (2) range of motion requirements vary with automobile design, and thus it is difficult to specify exact requirements; (3) as discussed in the visual fields section, the impact of limited range of motion on driving safety also depends on other functions; and (4) as with all the other tests in the ADReS battery, a patient's poor performance should be a stimulus for optimization of function, rather than for immediate driving restrictions.

If the patient's performance on this test is not within normal limits, the physician should be certain to elicit the reason: Do these movements cause muscle or joint pain? Does the patient complain of tight muscles or stiff joints? Do these movements cause a loss of balance? Patients with a history of falls have been noted to be at increased risk of motor vehicle crashes.[113] Knowing the answers to these questions will help in the management of the patient's physical limitations.

If the patient's performance warrants interventions, the physician should:

- Encourage the patient to drive a vehicle with power steering and automatic transmission, if he/she does not already do so.
- Recommend that the patient maintain or commence a consistent regimen of physical activity, including cardiovascular exercise, strengthening exercises, and stretching. (Successful Aging Tips, in Appendix B, suggests some exercises.)
- Refer the patient to a physical therapist or occupational therapist as needed for training and exercises to improve strength and/or range of motion.
- Provide effective pain control if the patient's range of motion and mobility are limited by pain. This may include prescribing analgesics or medications that treat the underlying disorder (e.g., a urate-lowering drug for gout), or changing when the patient takes pain medications so that relief is achieved prior to driving. Please note that many analgesics (including narcotics and skeletal muscle relaxants) have the potential to impair driving ability, and may be more deleterious to driving performance than the instigating pain. These medications should be avoided, if possible, or prescribed in the lowest effective dose possible. Patients should be advised to refrain from driving when first taking these medications until they know whether they are tolerated.
- Refer the patient to a specialist for management of any joint disease, podiatry issues, or neuromuscular problems. Post-stroke patients with residual deficits that interfere with the patient's handling of car controls should also be referred.
- Recommend an on-road assessment, performed by a DRS, to assess the patient's performance in the actual driving task. A comprehensive on-road assessment is particularly useful for assessing the impact of physical fatigue on the patient's driving skills.
- The DRS may prescribe adaptive devices as needed (e.g., a spinner knob on the steering wheel to compensate for poor hand grip or an extended gear shift lever to compensate for reduced reach), and train the patient in their use.

What do you do next?

After administering ADReS, you can follow one of three courses of action. (See also the *Physician's Plan for Older Drivers' Safety*, Figure 1, Chapter 1.)

If the patient performs well on all three sections of the ADReS battery, you may advise him/her that there are no medical contraindication to safe driving and no need for further work-up or treatment. Counsel the patient on health maintenance by providing the *Successful Aging Tips and Tips for Safe Driving* handouts, and periodically follow-up on the patient's driving safety. However, if there is evidence of a new onset of impaired driving behaviors (e.g., a decline from baseline) as described by the patient and/or family, further evaluation may be warranted despite a normal score.

If the patient performs poorly on any section of ADReS, but the causes of poor performance are medically correctable, pursue medical treatment until the

111. Marottoli, R. A., & Drickamer, M. A. (1993). Psychomotor mobility and the elderly driver. *Clin Geriatr Med.* 9(2):403–411.

112. Ball, K. K., Roenker, D. L., Wadley, V. G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? *J Am Geriatr Soc*. 54:77–84.

113. Margolis, K. L., Kerani, R. P., McGovern, P., et al. (2002). Risk factors for motor vehicle crashes in older women. *J Gerontol Series A-Bio Sci Med Sci*. 57:M186–191.

patient's function has improved to the fullest extent possible. The patient may need to be counseled to limit driving as treatment proceeds. Assess the patient's level of improvement with repeat administration of ADReS. If the patient now performs well on all three sections of the ADReS battery, counsel him/her on health maintenance as above.

If the patient's poor performance on the ADReS battery cannot be medically corrected, or if the patient's function shows no further potential for improvement with medical interventions, refer him/her to a DRS.

The ADReS battery is useful as an in-office assessment, but it does not evaluate the patient's performance in the actual driving task, and the results even if abnormal are not sufficient to recommend driving cessation. For this, an on-road assessment performed by a DRS is needed. The DRS can more specifically determine the patient's level of driving safety and correct his/her functional impairments, if possible, through adaptive techniques or devices. The role of the DRS is discussed in the next chapter.

CHAPTER 5

The Driver Rehabilitation Specialist

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The Driver Rehabilitation Specialist

After scoring Mr. Phillips' (introduced in previous chapters) performance on the ADReS battery, you discuss the results with him. You assure him that he scored well on the cognitive tests, but that his performance on the visual and motor tasks indicates a need for further evaluation and treatment.

You recommend that Mr. Phillips make an appointment with his ophthalmologist, whom he has not seen for over a year. You also recommend that he begin exercising regularly by walking for 10-minute intervals, three times a day, and stretching gently afterwards. His son, who is present at the clinic visit, offers to exercise with him several times a week. You schedule Mr. Phillips to return to your clinic in one month.

When Mr. Phillips arrives for his follow-up appointment, he is wearing new glasses. His vision with the new glasses is 20/40 OU. You retest his motor skills, and he is now able to complete the Rapid Pace Walk in 8.0 seconds. His lower extremity strength has improved to 4+/5, but his range of motion on finger curl and neck rotation remain restricted. With Mr. Phillips' agreement, you refer him to a driver rehabilitation specialist (DRS) for an evaluation and adaptive equipment, if necessary.

Despite your medical interventions, your patients will sometimes continue to demonstrate functional impairments that may impair their driving performance. In these cases, a DRS is an excellent resource. A DRS can perform a more in-depth functional assessment and evaluate performance with an actual driving task. Based on the patient's performance, the DRS can recommend that he/she continue driving with or without further restrictions or interventions, recommend adaptive techniques and devices to overcome functional deficits, or recommend that the patient cease driving and offer mobility counseling.

This chapter provides you with information you should have when you refer your patient to a DRS.

What is a driver rehabilitation specialist?

A DRS is one who "plans, develops, coordinates and implements driving services for individuals with disabilities."[114] DRSs are often occupational therapists who undergo additional training in driver rehabilitation. Aside from occupational therapy, DRSs also come from backgrounds such as physical therapy, kinesiotherapy, psychology, and driver education.

Many DRSs receive certification from the Association for Driver Rehabilitation Specialists (ADED)[115] by fulfilling education and experience qualifications[116] and passing a certification examination.[117] Certified driver rehabilitation specialists (CDRSs) renew their certification every three years by fulfilling a minimum amount of contact hours. While many DRSs either hold certification or are in the process of obtaining the necessary education and experience to sit for the examination, certification is not required to practice driver rehabilitation nor for ADED membership.

114. Association of Driver Rehabilitation Specialists: Driver Rehabilitation Specialist Certification Exam fact sheet (*www.driver-d.org/public/articles/index.cfm?Cat=10*).

115. The acronym ADED was retained when the association changed its name from the Association of Driver Educators for the Disabled to its current name.

116. Candidates must fulfill one of the following requirements: A. An undergraduate degree or higher in a health-related area of study with one year full time experience in degree area of study and an additional one year full time experience in the field of Driver Rehabilitation; B. Four year undergraduate degree or higher with a major or minor in Traffic Safety and/or a Driver and Traffic Safety Endorsement with one year full time experience in Traffic Safety and an additional two years of full time experience in the field of Driver Rehabilitation; C. Two year degree in health-related area of study with one year experience in degree area of study and an additional three years full time experience in the field of Driver Rehabilitation; D. Five years of full time work experience in the field of Driver Rehabilitation. Association of Driver Rehabilitation Specialists: Driver Rehabilitation Specialist Certification Exam fact sheet (www.driver-ed.org/public/articles/index.cfm?Cat=10).

117. Examination content includes (1) program administration, (2) the pre-driving assessment, (3) the in-vehicle assessment, (4) the on-road evaluation, (5) interpretation of assessment results, and (6) planning and implementation of recommendations. Association of Driver Rehabilitation Specialists: Driver Rehabilitation Specialist Certification Exam fact sheet (*www.driver-ed.org/public/articles/index.cfm?Cat=10*).

What do driver rehabilitation specialists do?

A DRS evaluates the client's driving skills, recommends rehabilitation as needed, and can suggest vehicle and/or route modifications (e.g., such as avoiding left hand turns) to enable the person to resume or continue driving safely. Although driver rehabilitation programs vary, most typically include the following elements in their evaluation:

Driver Evaluation

- Clinical assessment, including review of driving history, driving needs, and license status; review of medical history and medications; visual/perceptual assessment; assessment of range of motion, motor strength, coordination, sensation, and reaction time; and cognitive assessment.
- Functional (on-road) assessment, including assessment of vehicle ingress/egress, mobility aid management (e.g., ability to transport a wheelchair or scooter), vehicle preparation, vehicle control, adherence to traffic rules and regulations, environmental awareness and interpretation, and consistent use of compensatory strategies for visual, cognitive, physical, and behavioral impairments.
- Communication of assessment results and recommendations to the client:
  - Return to driving, with or without adaptive driving equipment.
  - Limit driving with restrictions placed on either the geographic areas or conditions in which the client drives.
  - Attend a remedial driving course to establish/maintain defensive driving skills.
  - Receive adaptive driving instruction or driver retraining using a vehicle matched to the client's individual needs.
  - Stop driving. This is advised when a client does not demonstrate the necessary skills to resume driving, and the potential for improvement with retraining is poor. In these cases, alternative transportation options are reviewed with the client.
  - Re-evaluation. This option is indicated if a client's function is expected to improve, or if a client demonstrates adequate skills to drive at present but has a progressive disorder that may cause future decline.

Passenger Vehicle Evaluation

- Assessment of vehicle, vehicle modifications, and equipment needed for the client's safe transport as a passenger.
- Consideration of the needs of the patient's family (for example, certain lifts or tie-down systems may be recommended due to an assisting family member's physical limitations).

Treatment and Intervention

- Adaptive driving instruction or driver retraining, with or without vehicle modifications.
- Coordination of vehicle modifications:
  - Vehicle consultation: The DRS serves as a consultant to clients who are purchasing a new vehicle to ensure that the vehicle will accommodate the necessary adaptive equipment.
  - Vehicle modification recommendations: The DRS provides written recommendations for all vehicle/equipment needs to the client, third party payer, and vehicle/equipment dealer.
  - Vehicle inspection: The DRS is involved with the client and adaptive equipment dealer in a final fitting to ensure optimal functioning of the recommended vehicle/equipment.

An initial driver evaluation can last one to four hours, depending on the client's presenting disabilities and driving needs. Following the clinical assessment, clients undergo an on-road assessment if they meet the minimum state standards for health and vision, and the client holds a valid driver's license or permit. The on-road assessment is performed in a driver rehabilitation vehicle equipped with dual brakes, a rear-view mirror and eye-check mirror for the DRS, and any necessary adaptive equipment.

Please note that clients who perform poorly on the clinical assessment may still undergo on-road assessment. In these cases, the DRS may recommend on-road assessment for one of two reasons: (1) clients who perform poorly on individual components of the clinical assessment may still demonstrate safe driving due to over-learning the driving task; and (2) clients and family members may need concrete evidence of unsafe driving, which can only be documented through observation of behind-the-wheel performance.

Who can driver rehabilitation specialists help?

Driver assessment and rehabilitation are appropriate for a broad spectrum of visual, physical, and/or cognitive disabilities. DRSs work with clients who have dementia, stroke, arthritis, low vision, learning disabilities, limb amputations, neuromuscular disorders, spinal cord injuries, mental health problems, cardiovascular diseases, and other causes of functional deficits.

Vehicle modification can be as straightforward as providing extended gear shift levers, padded steering wheels, or extra/larger mirrors to patients with arthritis, and training the client in their use. It can also be as complex as working with a client with dementia and his/her caregivers to determine the individual's driving needs, plan driving routes for the client (e.g., avoiding left hand turns or busy intersections), supervise practice drives, and provide close and extended follow-up.

What is the cost of driver assessment and rehabilitation?

While the cost of driver assessment and rehabilitation varies between programs and according to the extent of services provided, the range is typically $300 to $400+ (as of this printing) for a full assessment and $100 an hour for rehabilitation. If adaptive equipment is required, the cost is approximately $70 to $100 for a spinner knob, $400 to $500 for a left foot accelerator, $700 to $900 for hand controls, and thousands of dollars for reduced-effort steering systems, wheelchair lifts, and raised roofs and dropped floors on vans.

Two programs that may pay for driver assessments, driver rehabilitation, and vehicle modifications are each State's workers compensation and vocational rehabilitation programs. However, not all drivers—and often many older drivers—will not qualify for either program, and insurance coverage from Medicare, Medicaid, and private insurance companies is variable. To date, these expenses are usually out of pocket. In general, Medicare does not reimburse for driving services, and private insurance companies—basing their coverage on Medicare's covered services—tend to follow suit. However, some driver rehabilitation programs have successfully pursued insurance reimbursement from Medicare and other providers. (Note that while Medicare may provide partial or full reimbursement for driver assessment and rehabilitation, it does not cover the cost of adaptive equipment.) At present, the American Occupational Therapy Association (AOTA) is actively lobbying for consistent Medicare coverage of occupational therapy-performed driver assessment and rehabilitation, with the assertions that these services fall under the scope of occupational therapy practice and that driving is considered an instrumental activity of daily living.

Because rates and extent of insurance reimbursement vary among driver rehabilitation programs, patients should be encouraged to inquire about program rates, insurance coverage, and payment procedures (e.g., patient pays up-front and is reimbursed when insurance payments are received, or payment is collected directly from insurance provider).

Where can I find a driver rehabilitation specialist?

Driver rehabilitation programs and DRSs are still fairly rare, but in private practice they are often affiliated with hospitals, rehabilitation centers, driving schools, and State departments of motor vehicles. DRS services may also be found through area agencies on aging, universities, and area departments of education. Before referring patients to driving schools for driver assessment and rehabilitation, physicians are urged to determine that the staff has training and experience in driver rehabilitation. A background in driver education alone may be insufficient for appropriate assessment of medically impaired drivers and correct interpretation of the assessment.

To locate a DRS in your area, you may wish to start by calling the occupational therapy departments in your local hospitals or rehabilitation centers. The ADED's online directory is another good source of information. The directory, which can be found by clicking the Directory button at *www.driver-ed.org* or *www.ADED.net*, lists all 553 ADED members (as of December 2006), including 251 certified DRSs. You can search the directory by State, county, type of facility, program services offered, and professional background of the DRS, as well as by name of the DRS or name of the driver rehabilitation program. Please note that not all ADED members provide direct assessment and rehabilitation services; some are involved solely in vehicle modification, as indicated in their "program services" field. Many local chapters of the Alzheimer's Association (*www.alz.org*) also provide lists of area driving evaluation programs.

When selecting a DRS or driver rehabilitation program, the patient and family may want to ask:

- How many years of experience does the DRS (or program) have? In many cases, experience may be a more important indicator of quality than certification alone—there are many well-qualified DRSs who are not certified.
- Does the DRS provide both the clinical assessment and on-road assessment? A DRS who provides both components of the evaluation (or a program whose specialists perform both components as a team) is ideal. Referral to two separate specialists or centers is inconvenient for the physician and the patient, and often presents a greater insurance reimbursement challenge. In addition, some programs utilize a driving simulator program, which has strengths of reliability, but weaknesses of validity, lack of standardization, paucity of evidence that correlates it with other important outcomes, and possibly sickness induced by the simulator.
- Does the DRS provide rehabilitation and training? A good DRS (or program) should be experienced in both assessment and rehabilitation, and should be able to prescribe adaptive devices or vehicle modifications and train the patient in their use.
- How much can the patient expect to pay out-of-pocket for assessment, rehabilitation and adaptive equipment?
- Who will receive a report of the assessment outcome? In most cases, reports are sent to the patient and to the physician and/or referring agency (e.g., workers compensation or office of retirement services) Some DRSs also send reports to family members, at the request of the family and with the client's consent. Whether or not the DRS reports to the State DMV is highly variable: In States with mandatory reporting laws, the DRS and/or physician may send a report; if reporting is not legally required, some DRSs will still send a report in the interest of public safety. The policy of the DRS should be discussed with all parties prior to the evaluation.
- If the patient receives recommendations to cease driving, does the DRS

provide any counseling or aid in identifying alternative forms of transportation? Please note that DRS counseling does not preclude the need for physician follow-up. Many times, the patient may be too distressed at the time of DRS counseling to absorb information. Mobility counseling is crucial for reinforcement of this information, and it demonstrates to the patient the physician's involvement and support.

CarFit is an educational program created by the American Society on Aging and developed in collaboration with AAA (American Automobile Association), AARP, and the American Occupational Therapy Association. CarFit offers older adults the opportunity to check out how well their personal vehicles "fit" them. An evaluation, typically performed by an occupational therapist or a trained volunteer, employs a checklist for correct positioning of the seat, use of mirrors, and so forth. Information and materials for community-specific resources and activities that could make drivers personal vehicles fit better, enhance their safety as drivers, or increase their mobility in the community are available. More information on referring your patients to this service can be found at *www.car-fit.org*.

Making the referral

Prior to making the referral, let your patient know why he/she is being referred, what the assessment and rehabilitation will accomplish, what these will consist of, and how much he/she can expect to pay out-of-pocket for these services.

For example, you could tell Mr. Phillips:

"Mr. Phillips, I'm pleased that you can see better with your new glasses, and that your physical fitness has improved with your walking. I'd like you to keep up the good work. However, I'm still concerned about your hands and your neck. I'm concerned about your poor grip on the steering wheel, and I'm worried that you can't see around you well enough to drive safely. I'd like to send you to someone who can assist us with your driving abilities. Consider this a kind of 'driving check-up,' to be sure you are fit to drive.

"This person, who's called a driver rehabilitation specialist, will ask you some questions about your medical history and test your vision, strength, range of motion, and thinking skills—similar to what we did the last time you were here. He/she will also take you out on the road and watch your driving, and might recommend some accessories or modifications for your car, such as extra mirrors, and show you how to use them.

"The cost of these assessments ranges anywhere from $300 to $400, and there may be additional costs for accessories or rehabilitation training. However, it is possible insurance may pay for part of the assessment and training. I know this sounds like a lot of money, but I think this is important for your safety. If you were to ever get into a serious car crash, your medical bills or the costs for someone you injured could end up costing you more money. We should try to prevent that from happening."

Most programs will require a written physician prescription. When writing the driving evaluation prescription, try to list a specific cause for assessment and rehabilitation. Assessment that is ordered the patient is "an older adult," "debilitated," or "frail" does not provide adequate guidance to the DRS and can complicate insurance reimbursement. On the other hand, "OT driver evaluation for hand weakness such as poor finger flexion or limited neck rotation secondary to arthritis," "DRS evaluation for hemianopia secondary to stroke," and "DRS evaluation for cognitive impairments secondary to Alzheimer's disease" provide more guidance for the DRS and are more likely to be reimbursed by insurance. In addition, most DRS programs will send the physician a referral form that includes space for a list of current diagnoses and medications.

Remind your patient to schedule a follow-up appointment with you after he/she undergoes evaluation. If your patient is safe to drive (with or without restrictions, adaptive devices, and/or rehabilitation), reinforce any recommendations made by the DRS. When applicable, family and caregivers should be informed of these recommendations. Also remember to counsel your patient on the *Successful Aging Tips* and *Safe Driving Tips* handouts, and encourage him/her to start planning alternative forms of transportation in case they ever become necessary. If your patient is not safe to drive, then you will need to counsel him/her on driving cessation. This is discussed in the following chapter.

Special mention is made of other rehabilitation specialists who may be helpful for impairments that are not uncommon in older adults. For instance, physical therapists may be able to improve muscle weakness, range of motion or physical frailty. Visual rehabilitation may be available in some specialized centers. Neurophthalmologists or optometrists may provide vision training, especially for patients with neurological insults that affect convergence, alignment, nystagmus, eye apraxia, and/or visual neglect from stroke, head injury, brain tumors, and trauma.

What if driver assessment is not an option?

Unfortunately, driver assessment and rehabilitation may not always be feasible options for your patients. In some areas, DRSs simply are not available. Even if a DRS is available, your patient may refuse further assessment, or may be unable to afford it.

- If driver assessment through a driver rehabilitation specialist is not an option, you have several choices:
- Some occupational therapists are "generalists" and still may be able to perform off-road tests and/or mobility counseling. Referral to these types of health professionals may actually be a more common option in your community.

- Driving educational specialists are often based at high schools or affiliated with programs for novice drivers. Yet, some of these specialists have developed experience in assessing and counseling medically impaired drivers and may be a resource in your community.
- Advise your patient to continue, restrict, or cease driving based on the medical history, the results of ADReS, and your clinical judgment. As always, document your recommendation in the patient's chart. Some physicians have the patient sign a document for the file acknowledging the doctor's recommendation to cease driving.
- You might consider the evaluation of another health professional such as a geriatrician, neurologist, psychiatrist, or neuropsychologist for a patient who has a chronic disease such as Alzheimer's.
- If there are changes in driving behavior that you feel are likely to improve your patient's driving safety (e.g., avoiding driving at night, rush hour, adverse weather conditions, etc.), make these recommendations to your patient and follow up for compliance.
- Private driving schools and driving education programs may be available in your area; however, they may not have expertise in assessing older adults with medical impairments.
- If you are urgently concerned about your patient's driving safety, you may wish to refer your patient to your state DMV for a driving assessment. Depending on your state's reporting laws, you may be legally responsible for reporting "unsafe" drivers to the DMV. (A detailed discussion of the physician's legal and ethical responsibilities can be found in Chapter 7; a reference list of reporting laws is in Chapter 8.) The patient should be referred with his/her knowledge, and this should be documented in the chart. Many States will require the physician to fill out forms that require medical information and vision testing results, and provide an opinion on whether the driver should undergo visual and/or on-the-road testing.
- If there are no medical contraindications to continued driving, remember to counsel your patient on *Successful Aging Tips* and *Safe Driving Tips* and encourage him/her to start planning alternative forms of transportation.

CHAPTER 6

Counseling the Patient Who is no Longer Safe to Drive

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Mr. Phillips returns for follow-up after undergoing driver assessment. From the driver rehabilitation specialist (DRS) report, you know that the DRS recommends that Mr. Phillips resume driving after his car has been fitted with wide-angle rear-view mirrors. At the visit, Mr. Phillips states that he is driving more comfortably with this adaptive device. You counsel him on the Tips for Safe Driving and Successful Aging Tips, *advise him to continue walking, and encourage him to start planning alternate transportation options. His daughter is recruited to assist with these discussions and interventions.*

You continue to provide care for Mr. Phillips' chronic conditions and follow up on his driving safety. Three years later, Mr. Phillips' has a right middle cerebral artery stroke and deficits of left-sided weakness and hemispatial inattention. His health has declined to the extent that you believe it is no longer safe for him to drive. You also feel that due to the fixed nature of his deficits (more than six months since the event) driver rehabilitation is unlikely to improve his driving safety. Mr. Phillips has decreased his driving over the years, and you now tell him that it is time to stop driving completely. Mr. Phillips replies, "We've talked about this before, and I figured it was coming sooner or later." He feels that rides from family and friends and the senior citizen shuttle in his community will be adequate for his transportation needs, and he plans to give his car to his granddaughter.

Your next patient is Mrs. Allen an 82-year-old woman who is accompanied by her daughter. The daughter reports that her mother, who lives alone, has become increasing forgetful, repeats herself within minutes, and has difficulty dressing herself, performing personal hygiene tasks, and completing household chores. She is particularly concerned about her mother's daily trips to the grocery store two miles away. Mrs. Allen has become lost while on these trips and—according to the store manager—has handled money incorrectly. Dents and scratches have appeared on the car without explanation. Mrs. Allen's daughter has asked her mother to stop driving and tried to take the car keys, but Mrs. Allen responds with anger and resistance each time. The daughter would like to know how to manage her mother's long-term safety and health, and would especially like to know how to address the driving issue. What do you tell her?

For most of us, driving is a symbol of independence and a source of self-esteem. When an individual retires from driving, he/she not only loses a form of transportation, but all the emotional and social benefits derived from driving.

For various reasons, physicians may be reluctant to discuss driving cessation with their patients. Physicians may fear delivering bad news or be concerned that the patient will lose mobility and all its benefits. Physicians may avoid discussions of driving altogether because they believe that a patient will not heed their advice or become angry. The physician may also be concerned about losing a patient to another practice.

These concerns are all valid. However, physicians have an ethical responsibility to protect their patients' safety through assessment of driving-related functions, exploration of medical and rehabilitation options to improve their patients' driving safety, and—when all other options have been exhausted—recommendations for driving restriction or driving cessation. Physicians are influential in a patient's decision to stop driving; in fact, advice from a doctor is the most frequently cited reason that a patient stops driving.[118]

In this chapter, we discuss the key points to address when counseling a patient to stop driving and provide strategies for managing challenging cases. When counseling a patient to stop driving, the following steps may be useful:

118. Persson, D. (1993). The elderly driver: deciding when to stop. Gerontologist. 33:88–91.

Figure 1
Transportation alternatives

- Walking
- Train/subway
- Bus
- Taxi
- Friends/family
- Paratransit
- Community transportation services
- Hospital shuttles
- Medi-car
- Delivery services
- Volunteer drivers (church, synagogue, community centers)
- Private for-profit elderly care services

Explain to your patient why it is important to stop driving.

If your patient has undergone the ADReS battery (see chapters 3 and 4) or assessment by a driver rehabilitation specialist, explain the results of the assessment in simple language. Clearly explain what the results tell you about his/her level of function, and then explain why this function is important for driving. State the potential risks of driving, and end with the recommendation that your patient stop driving. This might be a good time to discuss the patient's thoughts or feelings, especially if he/she did cause a crash. If the patient should not drive, you might discuss issues related to injury, public safety, and/or liability. This discussion should be put in writing and if the patient lacks decision-making capacity, involve a family member or caregiver.

For example, you could say to Mr. Phillips:

"Mr. Phillips, the results of your eye exam show that your vision isn't as good as it used to be. Good vision is important for driving, because you need to be able to see the road, other cars, pedestrians, and traffic signs. With your impaired vision due to underlying eye disease and now a stroke, I'm concerned that you'll get into a car crash. Since your vision cannot be corrected to a level safe for driving, for your own safety and the safety of others, it's time for you to retire from driving. In addition, there are legal requirements for vision and you do not meet those any longer. "

Your patient may become upset or angry at your recommendation to stop driving. Acknowledge your patient's feelings and be empathetic to any emotional responses. While you should be sensitive to the practical and emotional implications of driving cessation, it is also necessary to be firm with your recommendation. At this time, it is best to avoid engaging in disputes or long explanations. Rather, you should focus on making certain your patient understands your recommendation and understands that this recommendation was made for his/her safety. If the patient is competent but will allow the presence of a spouse or family member, having this person present may be helpful when communicating this sensitive information. All discussions should be documented in the chart.

Discuss transportation options.

Once you have recommended that your patient stop driving, you need to explore possible transportation alternatives. Unfortunately, driving cessation has been associated with a decrease in social integration.[119] Discuss with your patient the fact that there may be alternative ways to reach destinations. Encourage your patient to take control of his/her future by creating a transportation plan. (Please note: If your patient does not have the cognitive capabilities for these tasks, see the section on patients who lack decision-making capacity later in this chapter.)

Give your patient resources to explore options (see Appendix B handout sheets). By providing this information, you empower your patient to formulate a personal plan for transportation. Special mention is made of The Hartford insurance company's educational brochures "We Need to Talk" and "At the Crossroads." These guides provide excellent worksheets for defining pertinent out-of-home activities, initiating discussions between patients and their families, and assisting the patient and the family member on deciding how specific trips will be accomplished.[120] This process will help your patient preserve a sense of self-determination and

119. Mezuk, B., & Rebok, G. W. (2008). Social integration and social support among older adults following driving cessation. *J Gerontol Series B Psychol Sci Social Sci.* 63:S298-303.

120. The Hartford. (2007). Alzheimer's, Dementia & Driving. Hartford, CT. *www.thehartford.com/alzheimers/brochure.html.* Accessed October 24, 2007.

independence. While older adult non-drivers usually prefer rides from friends and family, they are often uncomfortable with the accompanying feelings of dependency.[121] Using alternative transportation options such as buses, trains, cabs, or even walking, offers patients independence from having to rely on others. However, these may not be a reasonable alternative for those with physical frailty and/or dementia.

To begin a discussion on driving alternatives, ask if your patient has made plans to stop driving or how he/she currently finds rides when driving is not an option. Offer alternative transportation methods for your patient to use (Figure 6.1). Explore any barriers your patient foresees to these methods (i.e., financial constraints, limited service and destinations, and required physical skills for accessibility).

Help your patient identify his/her most feasible transportation options, as there often are necessary cognitive and physical skills required to access certain transportation alternatives. Stress the importance of planning ahead for social activities—which contribute to quality of life. Your patients can contact their Area Agency on Aging and/or Alzheimer's Association for information on local resources such as taxis, public transportation services, and senior-specific transportation services. To find contact information for your local area, call the nationwide Eldercare Locator at

800-677-1116. This might be a good time to refer to a social worker or a gerontological care manager who may be aware of alternate modes of transportation and/or can deal with the patient's feelings of social isolation or depression.

The Federal Government has recognized the limited transportation alternatives that are currently available (especially in rural areas) for an aging country with an increasing number of older adults who will no longer be able to operate an automobile. To that end, legislation has been enacted to support funding of novel programs to assist seniors with transportation to needed destinations. To find more information on transportation options, please go to *www.unitedweride.com*.

Encourage your patient to involve family members in creating a transportation plan. Obtain your patient's permission when involving family or caregivers, and encourage them to offer rides and formulate a weekly schedule for running errands. They can also help arrange for delivery of prescriptions, newspapers, groceries and other services (See Figure 6.2 for more tips). However, do not ignore your patient while including the caregiver in the discussion.

Reinforce driving cessation.

The message to cease driving is essential to ensure your patient's safety, yet also presents a significant demand on your patient to change his/her current behavior. Therefore, you will need to ensure that your patient understands the reasons (legal, health and safety) why you have recommended driving discontinuation. Your patient may become argumentative or emotional during the office visit. He/she may not fully comprehend your recommendations and may not remember all the information you provide. To help re-enforce your message:

- Ask your patient if he/she has any questions regarding the assessment and your recommendation. Reassure your patient that you are available should he/she have questions or need further assistance.
- Ask your patient to reiterate to you, why he/she must not drive. Stress this recommendation is for personal safety and the safety of others on the road.
- Your patient may benefit from the visual reinforcement of a prescription with the words "Do Not Drive." Ensure that your patient understands why he/she is receiving this prescription, so as to avoid feelings of anxiety or anger. See Figure 3 for further re-

Figure 6.2
Encourage family/caregiver assistance

- Encourage family to promote the health and safety of their loved one by endorsing your recommendation and assisting in securing needed transportation.
- Include them in the mobility counseling process.
- Provide resources to caregivers.
- Give copies of the How to Assist the Older Driver resource sheet (see Appendix B).
- Refer caregivers to the National Family Caregivers Association (NCFA) at 800-896-3650 or www.nfcacares.org to find resources and tips on caring for loved ones.
- Look for signs of caregiver burnout.
- Keep the communication door open to the family.
- In the case of cognitive impairment where it is believed the patient does not have decision-making capacity (e.g., lack of insight), communication with a family member to reinforce recommendations is imperative.
- Recognize that if the caregiver has depended on the patient for transportation, the situation may require more time, counseling, and support to meet the needs of the family.

121. Coughlin, J. (2001). Transportation and the Older Persons: Perceptions and Preferences. AARP Public Policy Institute Issue Paper.

Figure 6.3
Tips to reinforce driving cessation

Tip 1: Give the patient a prescription on which you have written "Do Not Drive, For Your Safety and the Safety of Others." This acts as a reminder for your patient and also emphasizes the strength of your message.

Tip 2: Remind your patient this recommendation is for his/her safety and for the safety of other road users.

Tip 3: Ask the patient how he/she might feel if they were to get in a crash and injure themselves or someone else.

Tip 4: Use economic arguments. Point out rising gas and oil prices, expense of car maintenance (tires, tune-ups, insurance), registration/license fees, financing expenses and depreciation of car value. Web sites are available to demonstrate the financial burden of owning and operating a car, and it may be useful to perform this exercise with the older adult.[1] Also, some physicians will state that the patient's life savings may be at stake if they drive against medical advice and injure someone.

Tip 5: Have a plan in place that involves family member support for alternative transportation.

1. The Real Cost of Car Ownership *Calculator. (2007). Bikes at Work Inc. www.bikesatwork.com/carfree/cost-of-car-ownership.html.* Accessed December 13, 2007.

enforcement tips.

- Send your patient a follow-up letter (see Figure 6.6). Place a copy of this letter in the patient's chart as documentation and another visual tool for re-enforcement. The letter should be written in simple language to ensure your patient understands your recommendation. You can use the sample letter in Figure 6.6 as a template.
- Discuss State reporting requirements with your patient (see Chapter 7 and Chapter 8 for more details). In the case of mandatory reporting laws, inform your patient that you are required by law to inform your local DMV of medical conditions that could affect a patient's safe operation of a vehicle. Let your patient know the DMV will follow up, and what to expect as part of this evaluation (i.e., review of driving record, required road test). In States with voluntary laws, a referral to the DMV could still be appropriate and patients may need to hear they will be reported if they drive against medical advice.
- Help facilitate family members' assistance in encouraging driving cessation, and if necessary, encourage your patient to self-report his/her impairment to the DMV. It may be helpful to enlist other trusted allies, such as clergy, friends, or the family attorney.
- Ask your patient to return to you in one month for a follow-up assessment. (See next section for details of this visit.)

Follow-up with your patient.

At your patient's follow-up appointment, you will want to assess:

- Your patient's ability to comply with the stop driving recommendation.
- Transportation resources your patient has identified and has or has not utilized, looking especially at viability.
- Signs of isolation or depression.

Start the assessment by asking the patient how he/she got to the appointment that day. This will help you determine whether your patient has been able to plan for and schedule transportation to and from necessary appointments. Ensure that your patient has secured reliable and sufficient transportation resources to meet his/her needs. Consider referral to a social worker or gerontological care manager.

As an example of a follow-up conversation with Mr. Phillips in your office, you could state the following;

Physician: *Here is a prescription for your medicines, you'll need to refill this at your pharmacy after our appointment … now how did you get here to the office today?*

Mr. Phillips: *Oh, my son dropped me off.*

Physician: *I see, has he been driving you lately?*

Mr. Phillips: *Yes, ever since I stopped driving, he and his wife have been taking me where I need to go. He is going to pick me up in 15 minutes.*

Physician: *How has that been working for you?*

Mr. Phillips: *This has worked quite well.*

Physician: *Will he be able to take you to the pharmacy?*

Mr. Phillips: *Yes, that will not be a problem.*

Physician: *It's wonderful that you have found them to be a reliable source for rides. What do you do when one of them is unable to drive you where you need to go?*

Be alert to signs of depression, neglect, and social isolation (see Figures 6.4[122] and 6.5 for details). Older adult who stop driving are at increased risk for

122. APA. (2000). Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC: American Psychiatric Association.

decreasing out-of-home activities.[123] Driving cessation has also been associated with an increase in depressive symptoms in the elderly[124] [125] in addition to an increased risk of nursing home placement.[126] Because depressive symptoms have also been linked to physical decline and mortality in the elderly,[127] it is important to continue to monitor your patient for any signs of decompensation. Ask your patient how he/she is managing without driving. Educate family members and caregivers on signs of depression and inquire about any concerns they may have.

Continue to assess and treat your patient's functional or cognitive impairments. If they improve to the extent that the patient is safe to drive again, notify the patient and give him/her the resource sheet on Tips for Safe Driving (see Appendix B).

Situations that require additional counseling.

It may be necessary to provide additional counseling to encourage driving retirement or to help your patient cope with this loss. Below, we provide potential situations (e.g., new patient scenarios) that may arise with patients who have difficulty coping or adhering to the recommendation to stop driving.

123. Marottoli, R. A., de Leon, C. F. M., Glass, T. A., et al. (2000). Consequences of driving cessation: decreased out-of-home activity levels. *J Gerontol B Psychol Sci Soc Sci.* 55:S334–340.

124. Marrottoli, R. A., Mendes de Leon, C., Glass, T. A., Williams, C. S., Cooney, L. M., Berkman, L. F., et al. (1997). Driving cessation and increased depressive symptoms: prospective evidence from the New Haven EPESE. *J Am Geriatr Soc.* 45:202–210.

125. Fonda S. J., Wallace R. B., Herzog A. R. (2001). Changes in driving patterns and worsening depressive symptoms among older adults. *J Gerontol.* 56(6):S343–351.

126. Freeman E. E., Gange S. J., Munoz B., Wet S. K. (2006). Driving status and risk of entry into long-term care in older adults. *Am J Public Health.* 96:1254–1259.

127. Berkman L. F., Berkamn C. S., Kasl S., et al. (1986). Depressive symptoms in relation to physical health and functioning in the elderly. *Am J Epidemiol.* 124:372–388.

Situation #1: The resistant patient.

If your patient is belligerent or refuses to stop driving, it is important for you to understand why. Knowing this will help you address your patient's concerns.

Listen to your patient. Use supportive statements when addressing your patient's concerns. Let your patient know you are there as an advocate for his/her health and safety.

Physician: *Mr. Adams, I understand you drove yourself to the appointment today. This worries me. At our last visit, I recommended that you retire from driving. I am wondering why you chose to drive yourself here today?*

Mr. Adams: *Well, doctor, I don't understand it. I've never gotten into an accident. My driving is fine and frankly, I don't think you have any right to tell me not to drive.*

Physician: *It sounds like you are frustrated and I can't imagine how difficult it must be for you to adjust to a life without driving. It's not an easy choice to make; however, it's the best choice for your health and safety, and as your physician, that is my primary concern. I want to help make this easier for you. Let's talk about some of your concerns regarding retiring from driving.*

Remember driving cessation can have severe emotional and practical implications for your patients, and they may have a difficult time adjusting.

- **Have the patient define when a person would be unfit to drive.** This will better help your patient recognize impairment in his/her own driving capabilities and will help you assess your patient's judgment and insight. In addition, it might open up discussion where you can each reach some common ground.

Physician: *Mr. Adams, when do you think it's an appropriate time for a person to stop driving?*

Mr. Adams: *I suppose when they drive unsafely or are a threat to others on the road.*

Physician: *That is an excellent observation; and I would agree with you.*

Mr. Adams: *Well, a friend of mine doesn't drive very well. He drives all over the road and runs red lights. I won't get in the car with him anymore because I worry about what may happen.*

Physician: *That can be a scary situation for your friend and others on the road as well. It's great that you are aware of the potential danger and that you know how to ensure your own safety. I am wondering, is there someone whom you trust, and who would tell you when they thought it was unsafe for you to continue driving?*

Many older drivers are able to identify peers whose driving they consider unsafe, yet may not have the insight to recognize their own unsafe driving habits. Ask your patients if they have friends with whom they are afraid to drive and why. It's important to have your patients begin to think about what they can expect when their driving abilities begin to decline. Let your patients know they are not alone and that many people make the decision to restrict or cease driving when safety becomes a concern. Encourage your patients to obtain a second opinion if they feel additional consultation is necessary.

- **Have your patient identify support systems.** Ask your patient to list family members, church groups, neighbors, etc. who are able and willing to help with transportation decisions. This will help your patient become aware of a supportive network and feel more at ease when searching for alternative transportation.

Figure 6.4
Questions to assess for major depression (adapted from the DSM-IV-TR)[1]

- Has your mood been down lately on a consistent basis?
- Have you lost interest or pleasure in all or most activities?
- Have you noticed any changes in appetite or weight?
- Have you noticed any changes in sleeping habits or in concentration?
- Have you noticed feelings of worthlessness or recurrent thoughts of death?

Figure 6.5
Signs of neglect or self-neglect

The patient has:

- An injury that has not been properly treated
- Symptoms of dehydration and/or malnourishment
- Weight loss
- Soiled clothing
- Recurrent falls with or without injuries
- Evidence of inadequate or inappropriate administration of medications
- Spoiled or outdated food in the refrigerator
- Loss of income from difficulty with finances

1. 146 American Psychiatric Association (APA) 2000. Diagnostic and Statistical Manual IV-R. (Fourth Edition-Text Revision). Washington: American Psychiatric Association.

- Help your patient view the positives of this decision—an opportunity to assert control over a limitation. Often, discussion of relinquishing driving privileges tends to focus on the negative aspects of driving cessation; i.e., "losing independence" or "giving up freedom." Help your patients view this as a step in health promotion and safety for themselves and others. Use phrases such as "it's time to retire from driving" and point out that he/she may still request rides from family and utilize community services, and will have lower costs and responsibility for maintaining an automobile.
- Refer patient to social worker. Your patient may need additional help in securing resources and transitioning to a life without driving. Social workers can provide supportive counseling to patients and families, assess your patient's psychosocial needs, assist in locating and coordinating community services and transportation, and enable your patient to maintain independence and safety, while preserving quality of life. The National Association of Social Workers Register of Clinical Social Workers is a valuable resource for finding social workers in your area who have met national verified professional standards for education, experience and supervision. Order information or access the on-line Register at www.socialworkers.org (see Appendix B for more details)Another resource for social workers may be your local hospital and a referral source may be the Area Agency on Aging or the Alzheimer's Association.

Situation #2: Your patient presents with symptoms of depression.

This results from a combination of factors such as diminished health, social isolation, or feelings of loss. If you suspect your patient may be depressed (see Figure 6.4[128]), conduct a full assessment to determine the most appropriate treatment. Talk with your patient and appropriate family members about symptoms of depression and available treatment options. Consider referring your patient to individual therapy or group therapy, and social/recreational activities. Also consider treatment with medications if appropriate, or referral to a mental health professional. Normalize this experience for your patient—acknowledge they have suffered a loss—and recognize this may be an especially difficult time for them.

Situation #3: Your patient lacks decision-making capacity.

When your patient presents with significant cognitive impairment, or lacks insight or decision-making capacity as in certain cases of dementia, it is imperative that you employ the help of the appointed guardian, caregiver, or surrogate decision-maker to encourage your patient to stop driving. Let family and caregivers know they play a crucial role in helping the patient find alternatives to driving. Inform the family that you will be available to support and assist in any way you can. In rare instances, it may be necessary to appoint a legal guardian for the patient. In turn, the guardian may forfeit the patient's car and license on behalf of the safety of the patient. These actions should only be used as a last resort. From a practical standpoint, hiding, donating, dismantling, or selling the car may also be useful in these difficult situations.

128. APA. (2000). Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Washington, DC: American Psychiatric Association.

Situation #4: Your patient shows signs of self-neglect or neglect.

Your patient may be unable to secure resources for him/herself and may be isolated, lacking sufficient support from family, friends or an appointed caregiver. If your patient does not have the capacity to care for him/herself, or family and caregivers lack the ability to adequately care for your patient, be alert for signs of neglect or self-neglect (see Figure 6.5). If you suspect neglect or self-neglect, involve adult protective services (APS). Neglect is the failure of a caregiver to fulfill his/her caregiving responsibilities, whether due to willful neglect or an inability as a result of disability, stress, ignorance, lack of maturity, or lack of resources. Self-neglect is the failure to provide for one's own essential needs. APS will investigate for neglect, self-neglect or abuse of the elderly person. APS can secure services such as case planning, monitoring, and evaluation; and can arrange for medical, social, economic, legal, housing, law enforcement and other emergency or supportive services. To obtain contact information for your State office, call the Eldercare Locator at 800-677-1116.

Figure 6.6

July 1, 2009

Clayton Phillips
123 Lincoln Lane
Sunnydale, XX 55555

Dear Mr. Phillips:

I am writing to follow-up on your clinic visit on June 20, 2009. As you recall, we talked about your safety when you drive a car. I tested your vision (eyes), strength, movement, and thinking skills, and asked you about your health problems and medicines. I recommended that you stop driving due to your slowed reaction time, poor vision and muscle weakness.

I know that driving is important to you, and I know that it is hard to give up driving, but your safety is more important than driving. To help you get around, you can ask for rides from your son and your friends. You can also use the special bus in your neighborhood. The hand out How to Assist the Older Driver (enclosed) has some other ideas that we talked about. As we discussed, I am also sending a copy of these materials to your son and you two can discuss this plan together.

I want to make sure you can still visit your friends, and go other places without a car. It is important for you to maintain your connection with the community. Please see me again in one month—we will talk about how this plan is working for you.

For a mandatory reporting State considering adding:

As we discussed, the State of _____ requires me to submit the names of potentially unsafe drivers. Because I am required by law to do this, I have given your name to the ____ Department of Motor Vehicles (DMV). The DMV will send you a letter in a few weeks to discuss your driver's license.

For a voluntary reporting State consider adding:

It is very important that you do not drive since you are putting yourself and the public at risk. If you continue to drive, I will need to report you to the Department of Motor Vehicles for an evaluation and possible revocation of your license.

Please call my office if you have any questions. I look forward to seeing you next month.

Sincerely,

Your Physician

Enc: How to Assist the Older Drive
cc: Your son

Note the sample letter in Figure 6.6 has been written at a 5th grade reading level, as measured by the S.M.O.G. Readability Formula

CHAPTER 7

Ethical and Legal Responsibilities of the Physician

CHAPTER 7

Ethical and Legal Responsibilities of the Physician

This chapter is intended to provide a general overview of a physician's ethical and legal responsibilities as related to reporting unsafe drivers to their State's DMV. While some sections of this chapter address issues that are inherently legal, the chapter is not intended to provide legal advice. The views, discussion, conclusions and legal analysis are those of the authors and do not represent the opinions, policies or official positions of NHTSA. This chapter conveys the current environment at the time of publication and compiles general knowledge to assist physicians in understanding the reporting process. Laws, regulations and policies vary not only by State but also by local jurisdiction, and are subject to change. Therefore, it is important for physicians to seek out legal advice from a licensed attorney in their States on specific issues or questions that may arise with an individual patient. The cases cited in this chapter are provided as examples of the range of opinions in attempting to fairly define the scope of the physician's responsibility to report impaired drivers. The cases additionally demonstrate society's efforts to provide safe environments for its citizens.

For your reference, we have compiled a State-by-State list of reporting laws, licensing requirements, license renewal information, and DMV contact information in Chapter 8. Please note that information may have changed since the publication of this guide. You are encouraged to contact your State DMV for the most up-to-date information.

Upon further evaluation, you diagnose Mrs. Allen (see Chapter 6) with Alzheimer's disease. It is readily apparent that her condition has progressed to the extent that she is no longer safe to drive and that rehabilitation is not likely to improve her driving safety. You tell Mrs. Allen that she must stop driving for the sake of her safety and the safety of others on the road. You also explain that the State physician reporting law requires you to notify the Department of Motor Vehicles (DMV) of your diagnosis. Initially, Mrs. Allen does not comprehend, but when you specifically tell her that she can no longer drive herself to the grocery store every day, she becomes agitated and abusive, screaming, "I hate you!" and "I'm going to sue you!" Her daughter understands your decision to report Mrs. Allen to the DMV, but is now concerned that she will encounter legal problems if her mother attempts to drive without a license. She asks if it is absolutely necessary for you to report her mother. What do you say?

Driving is a difficult topic to address, particularly when there is the risk of damaging the patient-physician relationship, violating patient confidentiality, and potentially losing patients. To complicate matters, many physicians are uncertain of their legal responsibility, if any, to report unsafe drivers to their state DMV.[129,130] As a result, physicians are often faced with a dilemma: should they report the unsafe driver to the State DMV at the expense of breaching confidentiality and potentially damaging the patient-physician relationship, or should they forego reporting and risk being liable for any potential patient or third-party injuries for failing to report? Furthermore, should they engage the family in taking the responsibility for driving restriction or cessation?

The Physician's Ethical Duties

Current legal and ethical debates highlight duties of the physician that are relevant to the issue of driving. These include:

"Duty to Protect"

The Patient

Protecting the patient's physical and mental health is considered the physician's primary responsibility. This includes not only treatment and prevention of illness, but also caring about the patient's safety. With regard to driving, physicians should advise and counsel their patients about medical conditions and possible medication side effects that may impair one's ability to drive safely. Certain states have enacted mandatory reporting requirements, which place the physician in danger of both civil and criminal liability for failure to report.[131] Wording in the Pennsylvania law has led the Pennsylvania DMV to state that physicians who do not report "could be held responsible as a proximate cause of an accident resulting in death, injury or property loss caused by your patient; the Pennsylvania statute further states that

129. Kelly, R., Warke, T., & Steele, I. (1999). Medical restrictions to driving: the awareness of patients and doctors. *Postgrad Med J*. 75:537–539.

130. Miller, D., Morley, J. (1993). Attitudes of physicians toward elderly drivers and driving policy. *J Am Geriatr Soc*. 40:722–724.

131. OR. REV. STAT.§ 807.710 (2001)

providers who do not comply with their legal requirement to report may be convicted of a summary criminal offense".[132] Some cases illustrate that a physician's failure to advise the patient about such medical conditions and medication side effects can be considered negligent behavior.[133]

The Public

In addition to caring for their patients' health, physicians may, in certain circumstances and jurisdictions, have some responsibility for protecting the safety of the public.[134,135] In certain states, physicians have been found liable for third-party injuries because they failed to advise their patients about medication side effects,[136] medical conditions,[137] and medical devices[138] that may impair driving performance thus causing harm to those other than the patient.

Maintaining patient confidentiality

Patient confidentiality is the right of an individual to have personal, identifiable medical information kept private; these protections are enumerated in the federal statute, the Health Insurance Portability and Accountability Act of 1996, or HIPAA.[139] Patient confidentiality is defined as the physician's ethical obligation to keep information about the patient and his/her care unavailable to those—including the patient's family, the patient's attorney, and the government—who do not have the authorization to receive or review this information.[140,141] Patient confidentiality is crucial within the physician-patient relationship because it encourages the free exchange of information, allowing the patient to describe symptoms for diagnosis and treatment.[142] Without belief in the patient confidentiality of their care, individuals may be less likely to seek treatment, disclose information for effective treatment, or trust the health care professional.[143]

The need for patient confidentiality cannot be considered absolute; a patient is entitled to freely disclose his or her symptoms and condition to his or her physician in confidence except where the public interest or the private interest of the patient so demands, and thus a patient possesses a limited right to patient confidentiality in extra-judicial disclosures subject to exceptions prompted by the supervening interest of society.[144] Thus, patient confidentiality does not necessarily protect the physi-

132. Title 75 PA. CODE § 1518(b) The Vehicle Code (*stating* physicians are immune from any civil or criminal liability if they **do report patients** 15 years of age or older who have been diagnosed as having a condition that could impair his/her ability to safely operate a motor vehicle; but, if the physician does not report could, then, possibly be held responsible as a proximate cause of an accident resulting in death, injury, or property loss caused by the physician's patient. Also, **physicians who do not comply** with their legal requirement to report may be convicted of a summary criminal offense). Available at *www.dmv.state.pa.us/pdotforms/fact_sheets/fs-pub7212.pdf*

133. *Gooden v. Tips*, 651 SW 2d 364 (*stating* in a Texas court case that physicians have a duty to warn patients that medications may impair driving but that physicians do not have a duty to control a patient's behavior).

Wilschinsky v. Medina, 108 NM 511 (*stating* in a New Mexico court case the physician owed a duty of care to an individual harmed by the physician's patient, that the patient's doctor's duty specifically extended to persons the patient injured by driving a car from the doctor's office after being injected with drugs that were known to affect judgment and driving ability; the medical standards for administering drugs had to define the physician's duties of care).

134. *Tarasoff v. Regents of University of California*, 13 Cal. 3d 177. It should be noted that the Tarasoff ruling per se, upon which the principles of 'Duty to Warn' and 'Duty to Protect' are based, originally applied only in the state of California and now applies only in certain jurisdictions. The U.S. Supreme Court has not heard a case involving these principles. Many states have adopted statutes to help clarify steps that are considered reasonable when a physician is presented with someone making a threat of harm to a third party. Tasman A, Kay J, Lieberman JA, Fletcher J (eds). *Psychiatry*, 1st ed. Philadelphia: W.B. Saunders Company; 1997: p. 1815

135. Brisbine, supra, 2002 PA Super 138, *; 799 A.2d 89 (defining factors applied in a Pennsylvania court case in determining the existence of a duty: (1) the relationship between the parties; (2) the social utility of the actor's conduct; (3) the nature of the risk imposed and foreseeability of the harm incurred; (4) the consequences of imposing a duty upon the actor; (5) the overall public interest in the proposed solution).

136. *Gooden v. Tips*, 651 SW 2d; 364. *Kaiser v. Suburban Transportation System*, 65 Wn. 2d 461, 398 P.2d 14 (*stating* in this Washington state case, that a physician could be held liable due to the fact that a patient took medication completely unaware that it would have any adverse effect on him because the physician failed to warn his patient, whom he knew to be a bus driver, of the dangerous side effects of drowsiness or lassitude that may be caused by taking this particular medication).

137. *Caldwell v. Hassan*, 260 Kan. 769 (*finding* in a Kansas court case that that the doctor had no duty to protect bicyclists - a third party- from his patient's actions because the patient who had a sleep disorder was aware of the problem and admitted to knowing that she should have stopped driving).

Duvall v. Goldin, 362 NW 2d 275 (*finding* in a Michigan court case that the physician was liable to third persons injured as it was foreseeable that a doctor's failure to diagnose or properly treat an epileptic condition could have created a risk of harm to a third party and that as a result of the patient's medical condition, caused an automobile accident involving the third persons).

Myers v. Quesenberry, 144 Cal App 3d 888, (*finding* in a California court case that if a physician knows or should know a patient's condition will impair the patient's mental faculties and motor coordination, a comparable warning is appropriate).

Schuster v. Alternberg, 424 NW 2d 159 (*finding* in a Wisconsin court case that if it was ultimately proven that it could have been foreseeable to a psychiatrist, exercising due care, that by failing to warn a third person or failing to take action to institute detention or commitment proceedings someone would be harmed, negligence could be established).

138. *Joy v. Eastern Maine Medical Center*, 529 A2d 1364 (*finding* in a Maine court case that when the doctor knew, or reasonably should have known that his patient's ability to drive has been affected by treatment that the doctor provided, he had a duty to the driving public as well as to the patient to warn his patient of that fact).

139. Health Insurance Portability and Accountability Act of 1996 (HIPAA), Public Law 104-191. 45 C.F.R.§ 164.512(a)—*Uses and Disclosures Required by Law* (2000). Federal Register / Vol. 65, No. 250 / Thursday, December 28, 2000 / Rules and Regulations; page 82811. Available at *www.hhs.gov/ocr/privacy/hipaa/administrative/privacyrule/prdecember2000all8parts.pdf*

140. Justice J. Patient confidentiality and pharmacy practice. Consult Pharmacist. 1997:12(11). Available at: *www.ascp.com/public/pubs/tcp/1997/nov/patient.html*.

141. Tasman A, Kay J, Lieberman JA, Fletcher J (eds). *Psychiatry*, 1st ed. Philadelphia: W.B. Saunders Company; 1997: p. 1808.

142. Retchin SM, Anapolle J. An overview of the older driver. *Clin Geriatr Med.* 1993;9(2):279-296.

143. *Ferguson v. City of Charleston*, 532 US 67 (deliberating in a South Carolina court case the benefits and risks of physician disclosing confidential patient information when that confidential information may protect patients and society from possible harm).

144. Tasman A, Kay J, Lieberman JA, & Fletcher J (eds). (1997). *Psychiatry*, 1st ed. P. 1808. Philadelphia: W. B. Saunders Company.

cian in the impaired driver situation.[145]

Reporting Facts and Trends

Medically Impaired Driver Reports

National Highway Traffic Safety Administration (NHTSA) provides some information on state reporting for medically impaired drivers.[146] Data from Oregon in **1993** suggested that close to 5,300 reports were submitted each year. About 55% were for drivers over age 65 years, and surprisingly one-third of reports were self-referral. Health care providers accounted for 37% of all reports. The two leading reasons for referral were epilepsy (19%) and stroke (15%). Few people had their license suspended. In **1995** Florida reported that 11.7% of referred drivers had their license suspended.[147]

Pennsylvania requires health professionals to report any medical condition that can impair the ability to control or safely operate a motor vehicle.[148] In **2008**, Pennsylvania received over 27,000 reports, and 22% of these individuals have impairments serious enough to merit recall of their driving privilege. An additional 21% of reports result in restrictions placed on the individual's driving privilege. Half of the recalls were attributed to seizure disorders, while 16% were attributable to other neurological disease.[149]

A recent Missouri report by Meuser, et al. on medically impaired drivers who are referred for fitness-to-drive evaluations found that very few older adults retain their license (<3%) when referred by any source.[150] Notably, very few (<30%) of referrals came from physicians- most reports were submitted by police officers- indicating a need to educate health professionals in this area. The mean age of the study group was 80 and had an elevated crash risk prior to license referral when compared to controls. The majority of the referrals were due to an underlying cognitive impairment such as dementia (45%), although visual impairment was present 30% of the time. Of the 4,100 reported individuals, 144, (3.5%) retained a driver's license after the process. Missouri has a voluntary reporting law and further study is required to determine the benefits between mandatory reporting States and those that allow voluntary reporting.[151]

Differences in referral rates, laws, and procedures probably account for variations among states. The information from the various states suggests that more research is needed on the sources of referral, barriers for reporting and the medical conditions of these drivers to determine whether referral is useful or whether other common conditions are underreported.

Limitations of Reports: Most states require that physicians fill out their state's forms when assessing fitness to drive. Physicians may experience problems or barriers to providing the state with accurate information. Taylor and colleagues found that patients, in fact, may not inform their doctor of relevant medical history that could pertain to driving.[152] Older drivers may have a poor understanding of the laws in their own state and/or have poor insight into their own driving abilities,[153] or simply cannot face voluntarily giving up their freedom to drive. Although the authors of this guide are not aware of any supporting studies, there are concerns about "doctor shopping," failure to disclose pertinent information in order to secure more favorable opinions, or approaching a new clinician who is unaware of the pertinent medical diagnoses. Physicians may be unaware of what functional battery or tests to perform to determine fitness-to-drive.[154] Inter-rater reliability has been reported to be low when different physicians filled out the same type of medical report on the same patient.[155, 156] However, physicians will continue to play an integral role in these types of evaluations and will require education in this area.[157] Thus, a comprehensive approach such as identifying medical conditions or red flags, and using the ADReS battery should assist physicians in addressing some of the concerns.

Physicians Concerns about Reporting

A study of 523 Canadian physicians' attitudes on medical fitness to drive found that most physicians would report unfit drivers, but at the same time believed this reporting could adversely affect the confidentiality expectations within the patient-physician relationship.[158] Physicians

145. *Ferguson v. City of Charleston*, 532 US 67.

146. National Highway Traffic Safety Administration. Family and Friends Concerned about an Older Driver. Available at *www.nhtsa.dot.gov/people/injury/olddrive/FamilynFriends/state.htm*. (Accessed 11/12/07). Also see, Molnar & Eby; Medical Fitness to Drive & A Voluntary Reporting Law: The AAA Foundation for Traffic Safety (2008).

147. National Highway Traffic Safety Administration. Family and Friends Concerned about an Older Driver. *www.nhtsa.dot.gov/people/injury/olddrive/FamilynFriends/state.htm*. Accessed 11/12/07.

148. Title 75 PA. CODE § 1518(b) The Vehicle Code.

149. PENNSYLVANIA DEPARTMENT OF TRANSPORTATION; PHYSICIAN REPORTING FACT SHEET; March 2008. Available at *www.dmv.state.pa.us/pdotforms/fact_sheets/fs-pub7212.pdf* (Accessed September 23, 2009)

150. Meuser T, Carr DB, & Ulfarsson GF. Motor-Vehicle Crash History and Licensing Outcomes for Older Drivers Reported as Medically Impaired in Missouri. Accident Analysis and Prevention. Accepted November 2008 (in press).

151. *Ibid.*

152. Taylor J, Chadwick DW, & Johnson T. (1995). Accident experience and notification rates in people with recent seizures, epilepsy or undiagnosed episodes of loss of consciousness. *Q J Med.* 88:733-740.

153. Kelly RM., Warke T, & Steele J. (1999). Medical restriction to driving: the awareness of patients and doctors. *Postgrad Med J*, 75:537-539.

154. *Ibid.*

155. Steir TS, Kitai E, Wiener A, & Kahan E. (2003). Are medical reports on fitness to drive trustworthy? *Postgrad Med J*. 79:52-54.

156. Di Stefano M & Macdonald W. (2003). Assessment of older drivers: relationships among on-road errors, medical conditions and test outcome. *J Safety Res*. 34:415-429.

157. Kakaiya R, Tisovec R, & Fulkerson P. (2000). Evaluation of fitness to drive: the physician's role in assessing elderly or demented patients. *Postgrad Med J*. 107:229-236.

158. Shawn C, Marshall MD, & Gilbert N. (1999). Saskatchewan physicians' attitudes and knowledge regarding assessment of medical fitness to drive. *Canadian Medical Association Journal*. 160(12):1701-1704. Molnar & Eby; Medical Fitness to Drive & A Voluntary Reporting Law: The AAA Foundation for Traffic Safety, pg 30 (2008).

have raised concerns about mandatory reporting, stating it can violate privacy, compromise the ability to counsel patients, and negatively impact the doctor-patient relationship.[159] Some physicians have suggested that mandatory reporting has the potential to discourage patients from seeking health care.[160]

Six states have mandatory reporting requirements: California, Delaware, Nevada, New Jersey, Oregon, and Pennsylvania. In California, physicians are required to report specific conditions such as seizure disorders or Alzheimer's disease, among other conditions. Cable et al. found that physicians practicing in mandatory reporting States are *more likely* to report impaired drivers to the licensing agency.[161] Thus, physicians may choose not to report in certain situations unless they are required by law to do so. We are not aware of any studies that examine the efficacy of mandatory or voluntary reporting laws, or any that have drawn comparisons between States with differing approaches. But, physicians are required to follow the law of their particular state as it now stands. We urge you to become familiar with your state's laws.

Immunity and Confidentiality: Of the 43 states with voluntary reporting laws, 18 currently do not protect reporting health professionals from liability for civil damages.[162] The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) reporting of a "Model Driving Impairment Law" has suggested that physician immunity from civil liability should be an important component of any law.[163,164] Physicians have concerns about breach of confidentiality; however, several exceptions to maintaining confidentiality exist. For example, information may be released if the patient gives his/her consent, or may be released without patient authorization in order to comply with reporting statutes (such as child abuse reporting statutes) and court orders. The Health Insurance Portability and Accountability Act (HIPAA) has a regulation that allows for reporting information that includes a patient's protected health information when it is in the public interest.[165] In some cases, the act of reporting itself may help protect the physician from damages sought by third parties.

Adhering to State Reporting Laws

Because each state has its own reporting laws, we have provided a state-by-state reference list in the following chapter. Please note that information may have changed since the publication of this guide. You should contact your State DMV for the most up-to-date information.

Please note that in states where there are no laws authorizing physicians to report patients to the DMV, physicians should have patient authorization in order to disclose medical information. In these states, physicians who disclose medical information without patient authorization may be liable for breach of confidentiality. Nevertheless, this should not dissuade physicians from reporting when it is necessary and justified to protect the patient and/or public.

The AMA recognizes that the safety of older drivers is a growing public health concern that is best addressed through multi-sector efforts to optimize vehicle design, the driving environment, and the individual's driving capabilities.[166] Please refer to chapter 1 in this guide to review AMA Ethical Opinion E-2.24 "Impaired Drivers and Their Physicians."

Putting it all together

How can you fulfill these competing legal and ethical duties? In this section, we provide recommendations for achieving this balance.

Counsel your patient and if indicated, include the family.

Patients should be advised of medical conditions, procedures and medications that may affect driving performance. (A reference table of medical conditions and medications that may affect driving performance, with recommendations for each, can be found in Chapter 9.) If you can get the patient's permission, involve the family in the counseling process whenever it seems appropriate. If the patient does not have decision-making capacity (e.g., due to Alzheimer's disease), this information should be given to a cognitively intact surrogate decision-maker.

Recommend driving cessation as needed.

As discussed in the previous chapters, you should recommend that a patient cease driving if you believe that he/

159. Molnar & Eby; Medical Fitness to Drive & A Voluntary Reporting Law: The AAA Foundation for Traffic Safety, pg 30 (2008).

160. Kelly R, Warke T, Steele I. Medical restrictions to driving: the awareness of patients and doctors. *Postgrad Med J*. 1999;75:537-539. Karen West et al., The Mandatory Reporting of Adult Victims of Violence: Perspectives from the Field, 90 Ky. L.J. 1071 (2001-2002).

161. Cable G, Reisner M, Gerges S, & Thirumavalavan V. Knowledge, attitudes, and practices of geriatricians regarding patients with dementia who are potentially dangerous automobile drivers: a national survey. *J Am Geriatr Soc*. 48(1):100-102. (2000).

162. Lococo K. (2003). Summary of Medical Advisory Board Practices in the United States. Task Report Prepared Under NHTSA Contract No. DTNH22-02-P-05111. Available at *www.aamva.org/KnowledgeCenter/Driver/At-Risk/ProgramPracticesRecommendationsAndModelLaws.htm*

163. Reporting of Driver Impairment Model Law; The National Committee on Uniform Traffic Laws and Ordinances, at *www.ncutlo.org/impairment.htm* Accessed Sept 24th, 2009.

164. Lococo K, Staplin L. (2004) In-Depth Study to Identify Best Practices for Licensing Drivers with Medical and Functional Impairments and Barriers to their Implementation. #DTNH22-02-P-05111; National Highway Traffic Safety Administration; 2004.

165. HIPAA (45-CFR-164.512) allows for reporting to the state when the situation is significant enough to put public safety at risk. Source: *http://answers.hhs.gov/cgi-bin/hhs.cfg*

Also see 45 C.F.R. Part 160, Subpart B, for specific requirements related to preemption of state law, "Permitted uses and disclosures 5. Public interest and benefit activities" Available at *www.hhs.gov/ocr/privacy/hipaa/understanding/summary/index.html*

166. AMA policy H-15.954 Older Driver Safety; (CSA Rep. 6, A-03).

she may be an unsafe driver and that his/her driving cannot be made safe by any available medical treatment, adaptive device, or adaptive technique. As always, base your clinical judgment on the patient's driving abilities rather than the patient's age. This recommendation should be documented in the chart and there should be a system in the office setting to check on future compliance with recommendations.

Know and comply with your State's reporting laws.

You must know and comply with your State's reporting laws (see Chapter 8). If you fail to follow these laws, you may be liable for patient and third-party injuries.

If your State has a mandatory medical reporting law, report the required medical condition(s) using the DMV's official form. If your State has a voluntary physician reporting law, report the information using the DMV's official form and any other reporting guidelines. If the DMV's guidelines do not indicate what patient information must be reported, provide only the minimum information necessary to show that your patient may be an unsafe driver.

Reduce the impact of breaching patient confidentiality

In adhering to the State's reporting laws, it may be necessary for the physician to breach their patient's confidentiality. However, you can do several things to reduce the impact of this on the patient-physician relationship.

Providing Notice to the DMV

Before reporting to the DMV, tell your patient what you are about to do. Explain that it is your ethical, and in some cases legal, responsibility to refer him/her to the State DMV, and describe what kind of follow-up can be expected from the DMV. Assure your patient that out of respect for his/her privacy, you will disclose only the minimum information required and hold all other information confidential. Even in States that offer anonymous reporting or reporter confidentiality, it is a good idea to be open with your patients. You may wish to remind the patient that ultimately the physician does not determine driver licensing. This is the responsibility of the State. Thus, the State has the final decision on determining whether the patient should still be allowed to drive.

When submitting your report, provide only the information necessary or required to establish that your patient may be unsafe. Consider giving your patient a copy of his/her report. By providing your patients with as much information as possible, you can involve them in the process and give them a greater sense of control.

Before contacting your patient's family members and caregivers, request the patient's permission to speak with these parties and document this in the chart. If your patient maintains decisional capacity and denies permission for you to speak with these parties, you must respect the patient's wishes.

Document diligently.

Through documentation, you provide evidence of your efforts to assess and maintain your patient's safety. In the event of a patient or third-party crash injury, good documentation may protect you against a judgment from a lawsuit.

To protect yourself legally, you should document your efforts, conversations, recommendations, and any referrals for further testing in the patient's chart.[167] In other words, you should document all the steps of *Physician Plan for Older Drivers' Safety* (PPODS) (see page 6) that you have performed, including:

- Any direct observations of your patient's functional status, red flags as described in PPODS, or driving history that lead you to believe that your patient may be potentially at risk for unsafe driving.
- Any counseling specific to driving (e.g., documenting that the patient is aware of the warning signs of hypoglycemia and its effects on driving performance).
- Formal assessment of your patient's driving-related functions (e.g., documenting that the patient has undergone the ADReS battery and including the ADReS scoring sheet in the chart).
- Any medical interventions and referrals you have made to improve the patient's function and any repeat testing to measure improvement.
- A copy of the DRS report, if the patient has undergone driver assessment and/or rehabilitation.
- Your recommendation on whether the patient should continue driving or cease driving. If you recommend that the patient cease driving, include a summary of your interventions (e.g., "sent letter to patient to reinforce recommendation," "discussed transportation options and gave copy of 'Patient Resource Sheet'," "contacted family members with patient's permission," and "reported patient to DMV with patient's knowledge"). Include copies of any written correspondence in the chart or electronic record.
- Follow-up for degree of success in using alternate transportation options and any signs of social isolation and depression. Document any further interventions, including referral to a social worker, geriatric care manager, or mental health professional.

Additional legal and ethical concerns

What should you do if you find yourself in a particularly challenging situation? In this section, we offer recommendations for several potential situations:

Situation 1: My patient threatens to sue me if I report him/her to the DMV.

A patient's threat to sue should by no means deter you from complying with

167. Carr DB. The older adult driver. *Am Fam Physician*. 2000;61(1):141-148.

your state's reporting laws. If a patient threatens to sue, there are several steps you can take to protect yourself in the event of a lawsuit:

- Know if your state has passed legislation specifically protecting health care professionals against liability for reporting unsafe drivers in good faith.[168] (This information can be found in the following chapter.)
- Even if your state has not passed such legislation, physicians generally run little risk of liability for following mandatory reporting statutes in good faith. Consult your attorney or malpractice insurance carrier to determine your degree of risk.
- Make certain you have clearly documented your reasons for believing that the patient is an unsafe driver.

Be aware that physician-patient privilege does not prevent you from reporting your patient to the state DMV. Physician-patient privilege, which is defined as the patient's right to prevent disclosure of any communication between the physician and patient by the physician, does not apply in cases of required reporting. Remind the patient that ultimately the physician does not determine licensing. This is the responsibility of the state. Thus, the state has the final decision on determining whether the patient should still be allowed to drive.

Situation 2: Should I report an unsafe driver even if my state does not have any reporting laws?

In this situation, the physician's first priority is to ensure that the unsafe driver does not drive. If this can be accomplished without having the patient's license revoked, then there may be no need to report the patient to the DMV. Before reporting your patient, you may address the risk of liability for breaching patient confidentiality by following the steps listed under Situation 1.

However, if your patient refuses to stop driving despite your best efforts, then you must consider which is more likely to cause the greatest amount of harm: breaching the patient's confidentiality versus allowing the patient to poten-tially injure himself/herself and third parties in a motor vehicle crash. According to AMA Policy E-2.24 (see Chapter 1), "in situations where clear evidence of substantial driving impairment implies a strong threat to patient and public safety, and where the physician's advice to discontinue driving privileges is ignored, it is desirable and ethical to notify the Department of Motor Vehicles."

Situation 3: My patient has had his/her license suspended by the DMV for unsafe driving, but I am aware that he/she continues to drive.

This patient is clearly violating the law, and several questions are raised: Is the physician responsible for upholding the law at the expense of breaching patient confidentiality? Since the license has been revoked by the DMV, is the driving safety of the patient now the responsibility of the DMV, the physician, or both?

There are several steps you can take in this situation:

- Ask your patient why he/she continues to drive. Address the specific causes brought up by your patient (see the previous chapter for recommendations). With your patient's permission, the family should be involved in finding solutions such as alternative methods of transportation.
- Ask your patient if he/she understands that he/she is breaking the law. Reiterate your concerns about the patient's safety, and ask how he/she would feel about causing a crash and potentially being injured or injuring someone else. Discuss the financial and legal consequences of being involved in a crash without a license or auto insurance. Many clinicians will remind the patient and/or family that the patient could have financial liability for any injuries caused by driving.
- Discuss the financial and emotional burden a car collision would cause them, their family, and all others involved.
- If your patient is cognitively impaired and lacks insight into this problem, the issue must be discussed with the individual who holds decision-making authority for the patient and with any other caregivers. These parties should understand their responsibility to prevent the patient from driving.
- If your patient continues to drive and your state has a physician reporting law, adhere to the law by reporting your patient as an unsafe driver (even if you have already done so previously, resulting in the revocation of your patient's license). If your state does not have a physician reporting law, base your decision to report as in Situation 2 (see above). The DMV, as the agency that grants and revokes the drivers license, will follow-up as it deems appropriate.

Situation 4: My patient threatens to find a new doctor if I report him/her to the DMV.

This situation, while unfortunate, should not prevent you from adhering to your state's reporting laws. As a physician, it is your responsibility to care for your patients' health and safety, regardless of such threats.

Several strategies may help you diffuse this situation:

- Reiterate the process and information used to support your recommendation that the patient stop driving.
- Reiterate your concern for the safety of your patient, his/her passengers, and those sharing the road.
- Remind your patient that you try to provide the best possible care for his/her health and safety. State that driving safety is as much a part of patient care as encouraging patients to wear a seat belt, keep a smoke detector in the house, floss their teeth, and have regular physical check-ups.

168. Tasman A, Kay J, Lieberman JA, Fletcher J (eds). *Psychiatry*, 1st edition. Philadelphia: W.B. Saunders Company; 1997; p. 1809.

- Encourage your patient to seek a second opinion. A DRS may evaluate the patient if this has not already been done, or the patient may consult another physician.
- If your state DMV follows up on physician reports with driver retesting, inform the patient that just as it is your responsibility to report him/her to the DMV, it is the patient's responsibility to prove his/her driving safety to the DMV. Emphasize that the DMV makes the final decision, and that only the DMV can legally take away the license. Remind your patient that you have done everything medically possible to help him/her pass the driver test.
- As always, maintain professional behavior by remaining unemotional and not expressing hostility toward your patient even if he/she ultimately makes the decision to seek a new physician.

Before consulting the reference list in Chapter 8, it will be helpful to familiarize yourself with the terms and concepts provided in the Glossary of Terms.

Glossary of Terms

Anonymity and Legal Protection: Several States offer anonymous reporting and/or immunity for reporting in good faith. More than half of all the States will maintain the confidentiality of the reporter, unless otherwise required by a court order.[169]

Driver Rehabilitation Programs: These programs, run by driver rehabilitation specialists (DRS), help identify at-risk drivers and improve driver safety through adaptive devices and compensatory techniques. Clients typically receive a clinical evaluation, driving evaluation, and—if necessary—vehicle modifications and training. (Driver assessment and rehabilitation are discussed in greater detail in Chapter 5.)

Duty to Protect: In certain jurisdictions state physicians have a legal duty to warn the public of danger their patients may cause, especially in the case of identifiable third parties.[170] With respect to driving, mandatory reporting laws and physician reporting laws provide physicians with guidance on their duty to protect.

Good Faith: Honest and respectful in all professional interactions[171]

Immunity for reporting: Many States exempt physicians from liability for civil damages brought by the patient if the physician reported the patient to the DMV beforehand.

Mandatory Medical Reporting Laws: In some States, physicians are required to report patients who have specific medical conditions (e.g., epilepsy, dementia) to their State DMV. These States provide specific guidelines and forms that can be obtained through the DMV.

Medical Advisory Boards: Medical Advisory Boards (MAB) generally consist of local physicians who work in conjunction with the DMV to determine whether mental or physical conditions may impair an individual's ability to drive. Some MABs specify mitigation that would permit continued licensure. MABs vary among States in size, role, and level of involvement.

Physician Reporting Laws: Some states require physicians to report "unsafe" drivers to the State DMV, with varying guidelines for defining "unsafe." The physician may need to provide: (a) the patient's diagnosis; and (b) any evidence of a functional impairment that can affect driving (e.g., results of neurological testing) to prove that the patient is an unsafe driver.[172]

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169. Sterns HL, Sterns R, Aizenberg R, & Anapole R. (2001, August). Family and Friends Concerned About an Older Driver. NHTSA Report No. DOT HS 809 307. "State Reporting Practices." Washington, DC: National Highway Traffic Safety Administration.

170. *Tarasoff v. Regents of University of California*, 13 Cal. 3d 177.

171. The American Medical Association Principles of Medical Ethics; Preamble, *generally* I-IX. Adopted June 1957; revised June 1980; revised June 2001. Code of Medical Ethics of the American Medical Association: Council on Ethical and Judicial Affairs; 2008-2009 Edition. American Medical Association, 2008.

172. Messinger-Rapport B & Rader E. (2000). High risk on the highway: how to identify and treat the impaired older driver. *Geriatrics*. 55(10)32-45.

Glossary of Terms *(continued)*

Physician Liability: Previous cases have illustrated situations in which the physician was held liable for civil damages caused by his/her patient's car collision when there was a clear failure to report an at-risk driver to the DMV prior to the incident.[173]

Renewal Procedures: License renewal procedures vary by State. Some States have age-based renewal procedures; that is, at a given age, the State may reduce the time interval between license renewal; restrict the ability to obtain license renewal by mail; require specific vision, traffic law and sign knowledge; and/or require on-road testing. Very few States require a physician's report for license renewal.[174]

Restricted Drivers License: Some States offer the restricted license as an alternative to revoking a driver's license. Typical restrictions include prohibiting night driving, limiting driving to a certain distance from home, requiring adaptive devices, and shortening the renewal interval. To our knowledge, the efficacy of these types of restrictions has not been tested.

Third (3rd) Party: The generic legal term for any individual who does not have a direct connection with the physician or legal transaction, but who might be affected by it, e.g., anyone injured other than the patient.

173. Capen K. (1994). New court ruling on fitness-to-drive issues will likely carry "considerable weight" across country. *Can Med Assoc J*. 151(5):667.

174. Tripodis VL. (1997). Licensing policies for older drivers: balancing public safety with individual mobility. *Boston Coll Law Rev*. 38 B.C.L. Rev 1051.

CHAPTER 8

State Licensing and Reporting Laws

CHAPTER 8

State Licensing and Reporting Laws

Each state has its own licensing and license renewal criteria for drivers of private motor vehicles. In addition, certain states require physicians to report unsafe drivers or drivers with specific medical conditions to the driver licensing agency.

This chapter contains licensing agency contact information, license renewal criteria, reporting procedures and medical advisory board information, listed by state. These materials are intended to guide physicians in understanding their legal responsibilities and managing the driving safety of their patients. The information in this chapter should not be construed as legal advice nor used to resolve legal problems. If legal advice is required, please consult an attorney who is licensed to practice in your state.

Please note that information may have changed since the publication of this guide. You should contact your State DMV for the most up-to-date information.

License renewal practices among states

Practices vary among states for license renewal based on age. A recent review summarized some of these nuances, and are reviewed in this paragraph.[175] Many states require renewal every four to five years, and one state requires no renewals until age 65 (Arizona). Fourteen states require some type of accelerated renewal for older drivers, ranging from age 60 to 80, with the length of the accelerated renewal cycle ranging from one year (Illinois at age 87) to five years (Arizona, Colorado, South Carolina). Surprisingly, one state actually has a decelerating renewal for older drivers, with no renewal required after age 65 (Tennessee). Over time, there has been a trend toward lengthening the period of license renewal. Seventeen states have special renewal provisions for older drivers, including in-person renewal, vision tests, written tests, road tests, a medical certification of fitness, or some combination of these. Thus, a minority of states have requirements for more-frequent testing for adults over 65.[176] A variety of options can apply due to the special renewal provisions of older drivers. These include license renewal, revocation or suspension, restriction, or shortening of the renewal cycle.

A recent review indicates that in some jurisdictions in Australia age-based assessment has not been associated with safety benefits.[177] Some of the literature supports vision testing during license renewal for older adults. One investigator compared occupant motor vehicle fatalities for those over age 60 in states with and without a vision-related relicensing laws and concluded there would be a 12.2-percent reduction in fatalities over the period of study if the majority of states without such laws were to adopt one.[178] Another study examined the effects of license renewal timing, and tests of visual acuity, knowledge and road examinations on older driver fatalities. The researchers concluded that tests of visual acuity were associated with a lower fatal crash risk for older drivers.[179] Another study investigated the effect of renewal testing by comparing the crash rates of older adults in Indiana and Illinois (which at the time required vision, knowledge, and road testing at age 75) with similar controls in states that do not have age-based testing (e.g., Ohio and Michigan). In states that had age-based testing, there was a 7 percent reduction in involvement in injurious crashes, but an increase in at-fault single-vehicle crash rates.[180] The authors concluded that routine road testing was not warranted.

An examination of the effects of shorter licensure renewal periods for older adults along with an analysis of the crashes before and after discontinuation of road tests for those under 75 in Illinois was performed. Comparing changes in 1989 from before to after new policies were enacted, no effects were observed on crashes, fatal crashes, crash rates, or licensure rates of older drivers. Although there are no data to support an improvement in public safety when road testing the general older adult population during license renewal, mandatory road testing requirements along with vision testing have been

175. Molnar, L. J., & Eby, D. W. (2005). A brief look at driver license renewal policies in the United States. *Public Policy and Aging Report*. National Academy on an Aging Society. 15;1, 13–17.

176. Morrisey, M. A., & Grabowski, D. C. (2005). State motor vehicle laws and older drivers. *Health Econ*. 14(4):407–419.

177. Fildes, B. N., Charlton, J., Pronk, N., et al. (2008). An Australian model license reassessment procedure for identifying potentially unsafe drivers. *Traffic Inj Prev*. 9:350–359.

178. Shipp, M. D. (1998). Potential human economic cost-savings attributable to vision testing policies for driver license renewal 1989–1991. *Optom Vis Sci*. 75:103–118.

179. Levy, D. T. (1995). The relationship of age and state license renewal policies to driving licensure rates. *Accid Anal Prev*. 27(4):461–467.

180. Lange, J. E., & McKnight, A. J. (1996). Age-based road test policy evaluation. *Transport Res Rec*. 1550:81–87.

noted to decrease license renewal rates.[181]

A recent U.S. study raises further doubt about the efficacy of intensive screening during the license renewal process. Vision tests were not found to reduce crash risk, while an in-person renewal requirement reduced fatalities for drivers 85 and older by 16.3 percent.[182] This may result from license renewal staff requesting that older adults be evaluated, with subsequent revocation of their license or some older drivers deciding to give up their licenses rather than go through the renewal process.

These testing procedures and regulations do impose significant costs on states, and at times inconvenience and costs to individual drivers. If licenses are revoked, older adults face the problems of restricted mobility and loss of out-of-home activities, which may decrease social connectedness. In addition, the impact on family members and caregivers, such as time away from work, is not insignificant. This burden must be carefully weighed against the actual "added value" or benefits of improved public safety.[183]

International experience

In Australia, different states have various requirements for older adults, ranging from no license renewal requirements, to vision, road, and/or requirement for a medical evaluation from a physician.[184] One study found similar crash rates across populations based on the number of licenses issued, indicating there were no demonstrable safety benefits for mandatory assessment programs.[185] Similarly, a comparison of Swedish and Finnish licensing practices did not demonstrate an advantage for age-related license renewal requirements. Finland requires regular medical evaluations starting at age 70 for license renewals, whereas Sweden has no age-related requirements. The Finnish program not only did not have a reduction in crash rates but was actually associated with higher pedestrian fatality rates.[186]

Specific state information

Information on each specific state was obtained from each state's driver licensing agency and reflects the most current information at the time of publication. Please note that this information is subject to change. Contact your specific states statutes for up-to-date changes in the laws or requirements. This is especially important when it comes to creating a clinic policy or deciding on an individualized approach to reporting. Legal counsel is recommended to advise your decision-making in this area.

When information was not available from an individual state's driver licensing agency, the following references were used and remain as useful resources for clinicians. The Insurance Institute for Highway Safety and Insurance Information Institute sites are usually updated at frequent intervals and the Web site will indicate the latest version.

181. Levy, D. T., Werrick, J. S., Howard, K. A. (1995). Relationship between driver's license renewal policies and fatal crashes involving drivers 70 years and older. *JAMA*. 274:1026–1030.

182. Grabowski, D. C., Campbell, C. M., Morrisey, M. A. (2004). Elderly licensure laws and motor vehicle fatalities. *JAMA*. 291:2840–2846.

183. Miller, T.R., & Levey, D.T. (2000). Cost-outcome analysis in injury prevention and control: eighty-four recent estimates for the United States. *Med Care*. 2000;28(6):562–582.

184. Fildes, B., Pronk, N., Langford, J., Hull, M., Frith, W., & Anderson, R. (2000). Model license re-assessment procedure for older and disabled drivers (Report # AP-176/00). Canberra, Australia: Ausroads.

185. Langford, J., Fitzharris, M., Newstead, S., & Koppel, S. (2004). Some consequences of different older driver licensing procedures in Australia. *Accid Anal Prev*. 36: 993–1001.

186. Hakamies-Blomqvist, L., Johansson, K., &Lundberg, C. (1996). Medical screening of older drivers as a traffic safety measure: a comparative Finnish-Swedish evaluation study. *J Am Geriatr Soc*. 446:650–653.

Alabama

Name of State & DMV contact information	Alabama Department of Public Safety PO Box 1471 Montgomery, AL 36102-1471 *www.dps.state.al.us*	334-242-4239

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/60 in best eye with or without corrective lenses. Class D only.
	Are bioptic telescopes allowed?	Yes-for daylight driving only for 2 years then will be reviewed.
Visual fields	Minimum field requirement	110° both eyes-Class D only
	Visual field testing device	Keystone View
Color vision requirement	Must be able to distinguish between amber, red, and green. New and professional drivers only	
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In-person
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No special requirements for age.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physician reporting is encouraged.
Immunity	Yes
Legal protection	Yes
DMV follow-up	Driver notified in writing of referral. For diabetes, seizures, and convulsions, etc., a form is sent to be completed by patient's doctor.
Other reporting	Will accept information from courts, police, other DMVs, family members, and anyone who completes and signs the appropriate forms.
Anonymity	Yes, unless the subjects request a copy of their medical records by completing the necessary forms, having them notarized, and paying the proper fee for copying these records.

Medical Advisory Board

Role of the MAB	The MAB was created to assist the Director for Public Safety concerning the medical aspects of driver license. The MAB consists of at least 18 members, with the chair elected on an annual basis. They assist the Medical Unit.
Medical Review contact information	The Medical Unit may be reached at 334-242-4239.

Alaska

Name of State & DMV contact information	Alaska Department of Motor Vehicles 3300 B Fairbanks Street Anchorage, AK 99503 *www.state.ak.us/dmv/*	907-269-5551

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/100 needs report from eye specialist—license request determined by discretion
	Are bioptic telescopes allowed?	Only under certain conditions specifically recommended by physician in regards to lighting conditions, number of miles to and from specific locations. Need letter stating "with the bioptic telescopes this patient can safely operate a motor vehicle without endangering the public under the following conditions:"
Visual fields	Minimum field requirement	None
Color vision	Is there a color vision requirement?	No
Road test	Type of road test	N/A
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Mail in every other cycle
	Vision testing required at time of renewal?	Yes, at in-person renewal
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No renewal by mail for drivers 69+, and to drivers whose prior renewal was by mail.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	A licensee should self-report medical conditions that cause loss of consciousness to the DMV.
Immunity	No
Legal protection	N/A
DMV follow-up	All medical information submitted to DMV is reviewed by the Department of Public Safety personnel.
Other reporting	Requires retest/re-exam upon receipt of documented problem by law enforcement, other DMVs, and family members.
Anonymity	N/A

Medical Advisory Board

Role of the MAB	Alaska does not have a Medical Advisory Board
Medical Review contact information	Referrals for reexamination can be sent to: Department of Administration, Juneau Driver Licensing | Po Box 110221 | Juneau, Alaska 99811 907-465-4361 | fax 907-465-5509

Arizona

Name of State & DMV contact information	Arizona Motor Vehicle Department Medical Review Program Mail Drop 818Z PO Box 2100 Phoenix, AZ 85001-2100 *www.dot.state.az.us/MVD/mvd.htm*	623-925-5795 phone 623-925-9323 fax

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/60 in best eye restricted to daytime only
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	70°, 35° Nasal
	Visual field testing device	Keystone view
Color vision	Is there a color vision requirement?	Commercial Drivers Licenses only
Road test	Depends on physician recommendation and provided information	
Restricted licenses	Yes, daylight only	

License Renewal Procedures

Standard	Length of license validation	12 years
	Renewal options and conditions	N/A
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	If recommended
Age-based renewal procedures	At age 65, reduction of cycle to 5 years. No renewal by mail after age 70	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes
Immunity	Yes
Legal protection	Reporting immunity is granted
DMV follow-up	Follows physician recommendation
Other reporting	Will accept information from courts, police, other DMVs, family members and other resources.
Anonymity	Yes

Medical Advisory Board

Role of the MAB	Reports are reviewed by the Medical Review Program staff to determine of a license requires a re-examination of driving skills/written testing, or medical/psychological evaluation.
Medical Review contact information	Mail Drop 818Z Medical Review Program PO Box 2100 Phoenix, AZ 85001 623-925-5795 Fax 623-925 9323

Arkansas

Name of State & DMV contact information	Arkansas Driver Control Hearing Officer, Rm 1070 1910 West 7th Little Rock, AR 72203 *www.state.ar.us/dfa/odd/motor_vehicle.html*	501-682-1631

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/50
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in best eye for unrestricted; 20/60 restricted
	Are bioptic telescopes allowed?	Yes, under certain circumstances. 20/50 through telescope, 20/50 through carrier/must still have minimal field of vision 105°
Visual fields	Minimum field requirement	Both eyes 105°
Color vision	Is there a color vision requirement?	OPTEC Screening Machine
Road test	Type of road test	Standardized
Restricted licenses	Yes, daylight driving only at physicians' recommendation—however must meet minimal visual requirements	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person, and by mail only if out of state
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	We do encourage unsafe driver's to be reported to our office.
Immunity	No
Legal protection	No
DMV follow-up	Medical information is reviewed by the director of Driver Control. An appointment is scheduled within 2 weeks of receipt. At that time, a medical form is given to the licensee for completion by a physician. If the medical exam is favorable, the road test is given.
Other reporting	Will accept information from courts, police, other DMVs, and family members.
Anonymity	N/A

Medical Advisory Board

Role of the MAB	Arkansas has no Medical Advisory Board.
Medical Review contact information	Unsafe drivers may be referred to Driver Control at the contact above.

California

Name of State & DMV contact information	Licensing Requiring/Renewal California Department of Motor Vehicles 2415 First Avenue, Mail station C152 Sacramento, CA 95818-2698 *www.dmv.ca.gov/*	916-657-6550

Licensing Requirements

Visual acuity	Each eye with/without correction	One eye 20/70 if other is 20/40. This is a screening standard, if failure then referral to vision specialist, possible road test. Not an absolute standard.
	Both eyes with/without correction	20/40. Also a screening standard
	If one eye blind—other with/without correction	20/40 (with road test given unless stable, long-standing condition
	Absolute visual acuity minimum	Better than 20/200, best corrected, in at least one eye. Cannot use bioptic telescope to meet standard.
	Are bioptic telescopes allowed?	Yes, daylight driving only.
Visual fields	Minimum field requirement	75 degrees for a person wearing a bioptic telescopic lens. No minimum field exists for any other drivers
Color vision requirement	No	
Type of road test	The Driving Performance Evaluation (DPE) is administered for original licensing and for some experienced impaired drivers (e.g., drivers with vision problems). For other experienced drivers (e.g., drivers with cognitive deficits), the Supplemental Driving Performance Evaluation (SDPE) is administered.	
Restricted licenses	Yes, varied restrictions—most commonly to corrective lenses.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	In person or, if qualify, mail renewal for no more than 2 license terms in sequence.
	Vision testing required at time of renewal?	Yes, at in person, not mail, renewal
	Written test required?	At in-person renewal, unless driver has had 2 and would be eligible for a 3rd sequential mail renewal, if there were such. These drivers don't take a written test.
	Road test required?	Not generally, unless evidence of highly likely impairment for driving.
Age-based renewal procedures	No mail renewal at 70+	

Reporting Procedures

Mandatory medical reporting	Yes, physicians are required to report all patients diagnosed with 'disorders characterized by lapses of consciousness'. Law specifies that this definition includes Alzheimer's 'and those related disorders that are severe enough to be likely to impair a person's ability to operate a motor vehicle.'
Physician reporting laws	Physicians are not required to report unsafe drivers. However, they are authorized to report, given their good faith judgment that it's in the public interest.
Immunity	Yes, if condition is required to be reported. (A physician who has failed to report such a patient may be held liable for damages.) A physician has immunity from reporting a condition, even if it not required, if in good faith, the physician believes it will serve the public interest.
Legal protection	See above

California (continued)

DMV follow-up	The medical information obtained from physician is reviewed by DMV hearing officers within Driver Safety Branch. Driver will be reexamined; at conclusion of process DMV may take no action, impose restrictions, limit license term, order periodic reexaminations, suspend or revoke the driver's license.
Other reporting	Basically anyone—DMV will accept information from driver him or herself, courts, police, other DMVs, family members and other resources.
Anonymity	If so requested, name will not be divulged (unless court order mandates disclosure)

Medical Advisory Board

Role of the MAB	Gathers specialists for panels on special driving related topics (e.g., vision). Panels make policy recommendations to DMV for dealing with groups of drivers having a particular type of impairment. No recommendations are made regarding individuals as such.
Medical Review contact information	MAB no longer meets as a group. For further information contact: Post Licensing Policy California Dept. of Motor Vehicles 2415 First Ave., Mail Station C163 Sacramento, CA 95818-2698 916-657-5691

Colorado

Name of State & DMV contact information	Colorado Division of Motor Vehicles Driver's License Administration 1881 Pierce Street, Room 136 Lakewood, CO 80214 *www.colorado.gov/revenue/dmv*	303-205-5646

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40*
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	No absolute minimum acuity. Will license any individual that physician/optometrist feels is not a danger.
	Are bioptic telescopes allowed?	Yes, however we are going to revisit the issue in the near future.
Visual fields	Minimum field requirement	Yes, we now test for minimum horizontal fields.
Color vision requirement	No	
Restricted licenses	Yes: based on the results of the vision screening test and/or doctor's recommendations.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	If eligible, mail in every other cycle
	Vision testing required at time of renewal?	Yes, unless mail-in renewal
	Written test required?	Only if point accumulation results in suspension
	Road test required?	No, unless condition has developed since last renewal that warrants road test.
Age-based renewal procedures	All licenses are valid for 5 years. However, license holders 61 and older cannot renew by mail.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Drivers should self-report medical conditions that may cause a lapse of consciousness, seizures, etc. Physicians are encouraged but not required to report patients who have a medical condition that may affect their ability to safely operate a motor vehicle.
Immunity	Yes—no civil or criminal action may be brought against a physician or optometrist, licensed to practice in Colorado, for providing a written medical or optometric opinion.
Legal protection	No
DMV follow-up	Driver notified in writing of referral. Driver undergoes re-examination. One circumstance for retest: incident report from law enforcement. Medical clearance may be required from a physician. Restrictions may be added to license.
Other reporting	Will accept information from courts, police, other DMVs and family members.
Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	Colorado does not currently retain a medical advisory board.
Medical Review contact information	Questions about medical review can be referred to 303-205-5788

* Unless the driver is blind in one eye, testing each eye is not typically conducted.

Connecticut

Name of State & DMV contact information	Connecticut DMV Medical Review Division 60 State Street Wethersfield, CT 06161-2510 *http://dmvct.org/*	860-263-5223 Fax: 860-263-5774

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70 better eye restricted; some circumstances allow for license at 20/200 or better
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	100° monocular; 140° binocular
	Visual field testing device	OPTEC 1000
Color vision	Is there a color vision requirement?	No (only for commercial drivers)
Road test	A general on the road skills test with Motor Vehicle instructor or licensing agent. Test for "graduated license' conducted by off-site staff who makes and appt. with applicant at residence and conducts test in State-owned, dual control vehicle. Applicant with specific needs is trained/tested by a Handicapped Driver Training Unit certified driving instructor.	
Restricted licenses	Graduated license considerations include applicant's health problem/condition, accident record and driving history. Restrictions include: daylight only, corrective lenses, no highway driving, automatic transmission only, required external mirrors, special controls or equipment, use of hearing aid.	

License Renewal Procedures

Standard	Length of license validation	6 years
	Renewal options and conditions	In-person at DMV full-service branch, mobile units scheduled locations, satellite offices, license renewal centers, authorized AAA offices.
	Vision testing required at time of renewal?	Yes, at age 65.
	Written test required?	No
	Road test required?	Only for new applicants or for applicants whose license has expired for two or more years.
Age-based renewal procedures	Yes, age 65+ may renew for 2 years; age 65+ may renew by mail upon written application showing hardship which shall include but not limited to proximity of operator's residence to DMV renewal facility.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Sec 14-46 states that "physicians may report to the DMV, in writing the name, age, and address of any person diagnosed by him to have any chronic health problem which in the physicians judgment will significantly affect the person's ability to safely operate a motor vehicle."
Immunity	No civil action my be brought against the commissioner, the department or any of its employees, the board or any if its members or any physician for providing any reports, records, examinations, opinions or recommendations. Any person acting in good faith, shall be immune from liability.
Legal protection	Only the laws regarding immunity apply.
DMV follow-up	Driver notified in writing of referral to MAB. If MAB requires additional information for review in order to make a recommendation, driver is requested to file the additional medical information requested; entire file is referred back to MAB and driver is notified of such referral.

Connecticut (continued)

Other reporting	State regulations, require “reliable information’ to be on file for DMV to initiate a medical review case. This includes a written, signed report from person in medical/law enforcement profession., or a third party report on the DMV affidavit which requires signing in the presence of a notary public.
Anonymity	All information on file in a medical review case is classified as “confidential” but is subject to release to the person at their representative, upon written authorization from the person to release the data.

Medical Advisory Board

Role of the MAB	MAB must be comprised of 8 specialties: general medicine or surgery, internal medicine, cardiovascular, medicine, neurology, or neurological surgery, ophthalmology, orthopedics, psychiatry or optometrist. Advise commissioner on health standards relating to safe operation of motor vehicles; recommend procedures and guidelines for licensing individuals with impaired health; assist in developing medically acceptable standardized report forms; recommend training course for motor vehicle examiners on medical aspects of operator licensure; undertake any programs/activities commissioner may request relating to medical aspects of motor vehicle operator licensure; make recommendations and offer advice on individual health problem cases referred and establish guidelines for dealing with such individual cases.
Medical Review contact information	Department of Motor Vehicles Medical Review Division 60 State Street Wethersfield, CT 06161-2510

Delaware

Name of State & DMV contact information	Delaware Department of Safety Division of Motor Vehicles Medical Records PO Box 698 Dover, DE 19903 *www.dmv.de.gov*	302-744-2507

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/50 restricted license, beyond 20/50 driving privileges denied
	Are bioptic telescopes allowed?	Yes, on a case by case basis: daytime only
Visual fields	Minimum field requirement	None
Color vision	Is there a color vision requirement?	None
Restricted licenses	Yes, daytime only	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes, must pass vision screening
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	Yes. Failure to do so is punishable by a fine of $5 to $50. Physicians should report patients subject to "losses of consciousness due to disease of the central nervous system."
Physician/medical reporting	Yes
Immunity	Yes
Legal protection	Unknown
DMV follow-up	Driver notified in writing of referral; license suspended and further examination necessary.
Other reporting	DMV will accept information from courts, other DMVs, police, and family members.
Anonymity	Yes. DMV protects the identity of the reporter.

Medical Advisory Board

Role of the MAB	If the DMV receives conflicting or questionable medical reports, they are sent to the MAB for a determination as to whether or not a person is medically safe to operate a motor vehicle.
Medical Review contact information	Medical Records Section - Driver Improvement Unit PO Box 698 Dover, DE 19903-0698 Phone: 302-744-2507 Fax: 302-739-5667

District of Columbia

Name of State & DMV contact information	District of Columbia Department of Motor Vehicles Medical Review Office 301 C Street NW., Room 1033 Washington, DC 20001 *http://dmv.washingtondc.gov/*	202-727-6244

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/70
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 acuity; 20/70 in better eye requires 140 E visual field for restricted license.
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	130° both eyes (may be approved by director at 110°)
	Visual field testing device	Confrontation or perimetry (Binocular)
Color vision requirement	New drivers	
Type of road test	Road test is required for new drivers. Senior citizens may be required to take the read test on an observational basis. Also, some physical disabilities may require re-testing.	
Restricted licenses	Yes: acuity not less than 20/70 and daytime, if field of vision is 140°	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	IDC drivers with clean driver record and no medical requirements can now renew driver licenses on-line
	Vision testing required at time of renewal?	Yes
	Written test required?	Yes, however drivers are allowed a 6 months grace period
	Road test required?	No
Age-based renewal procedures	At age 70, the licensee must have the physician complete the certification on the drivers license application form.	

Reporting Procedures

Physician/medical reporting	If patient has a medical condition that may impair your ability to safely operate a motor vehicle, even temporarily, you must provide a Medical and/or Eye Report* from your physician. Some of these conditions include: Alzheimer's disease: Requires a Medical Report* and the completion of the knowledge and road skills tests; Seizure Disorder/Loss of Consciousness: Requires a Medical Report* DC regulation states you must be seizure-free for at least twelvemonths prior to obtaining a driver's license. If you are currently licensed and experience a seizure or loss of consciousness, you must report the incident to DMV within 30 days. Unless your physician indicates the seizure was due to a change in medication, or strictly nocturnal, DMV will suspend your driving privilege for twelve months from the date of the last episode; Insulin-dependent Diabetes: Requires a Medical and Eye Report; Vision impairment (i.e., glaucoma, cataracts, eye disease, and monocular vision): Requires an Eye Report*
Immunity	No
Legal protection	No

District of Columbia (continued)

DMV follow-up	DMV will use the medical information provided by your physician to determine if a driver's license may be issued or issued with restrictions. We may also issue a driver's license for a shorter duration based on your physician's information. Also, if your doctor recommends follow-up Medical and/or Eye Reports,* we will track this information to ensure compliance. If we do not receive the follow-up reports within the timeframe specified by your physician, your license will be subject to suspension.
Other reporting	A Medical Report* is also required when a law enforcement officer suspects a driver may have a medical condition that led to a traffic citation or accident. If DMV receives a detailed, written statement from a family member, law enforcement officer, or physician related to the unsafe driving of a resident, we will also require the resident to complete a Medical Report.* Driving tests may also be required in any of these situations, depending on the circumstances.
Anonymity	Yes, reporters are allowed to remain anonymous

Medical Advisory Board

Role of the MAB	DC-DMV does not currently have a Medical Advisory Board.
Medical Review contact information	Referrals can be made to the contact above.

* Available at *www.dmv.washingtondc.gov/info/forms/medical_eye_pdf.shtm*

Florida

Name of State & DMV contact information	Florida Division of Drivers License Medical Review Neil Kirkman Building, Room A227-MS 86 Tallahassee, FL 32399-0500 *www.hsmv.state.fl.us/ddl/dlfaq_new.html*	850-488-8982 phone 850-921-6147 fax

Licensing Requirements

Visual acuity	Each eye without correction	20/40: 20/50 or worse referred to eye specialist for possible improvement
	Both eyes without correction	20/40: 20/50 or worse referred to eye specialist for possible improvement
	Each eye with correction	20/70, other eye better than 20/200
	Both eyes with correction	20/70, unless one eye 20/200
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	130° horizontal
	Visual field testing device	None, Goldman by eye specialist if indicated
Color vision requirement	No	
Type of road test	Standard Road Test	
Restricted licenses	Yes: Corrective lenses, outside rearview mirror, business &/or employment purposes only, daylight driving, automatic transmission, power steering, directional signals, grim on steering wheel, hearing aid, seat cushion, hand control or pedal ext, left foot accelerator, probation interlock device, medical alert bracelet, educational purposes, graduated license restrictions, other restrictions.	

License Renewal Procedures

Standard	Length of license validation	4–6 years, depending on driving history
	Renewal options and conditions	In-person, every 3rd cycle
	Vision testing required at time of renewal?	At in-person renewal only
	Written test required?	Depending on driving history and/or DL supervisor requires on the basis of observation of physical or mental impairments
	Road test required?	Only if DL supervisor requires on the basis of observation of physical or mental impairments
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	"Any physician, person or agency having knowledge of a licensed driver or applicant's mental or physical disability to drive may report the person to the Department of Highway Safety and Motor Vehicles." Forms are available on DHSMV Web site, as well as at local driver license offices. Physicians are "authorized" by law and encouraged to report—DDL Medical Section provides other forms as situation requires.
Immunity	The law provides that no report shall be used as evidence in any civil or criminal trial or in any court proceeding.
Legal protection	Florida law "authorizes" the physician to report unsafe drivers.
DMV follow-up	Investigation: Sanction actions if needed, Driver notified in writing.
Other reporting	Law authorizes any person, physician or agency.
Anonymity	Yes

Florida (continued)

Medical Advisory Board

Role of the MAB	To advise the Department on medical criteria and vision standards and to make recommendations on mental and physical qualifications of individual drivers.
Medical Review contact information	MAB Chairperson DHSMV/DDL/Driver Improvement Medical Section 2900 Apalachee Parkway Tallahassee, FL 32399-0570 Telephone: 850-488-8982 Fax 850-921-6147

Georgia

Name of State & DMV contact information	Georgia Department of Public Safety Attn: Medical Unit PO Box 1456 Atlanta, GA 30371 *www.dds.ga.gov/drivers/index.aspx*	678-413-8500 or 678-413-8600 Outside Atlanta metro 866-754-3687

Licensing Requirements

Visual acuity	Each eye with/without correction	20/60
	Both eyes with/without correction	20/60
	If one eye blind—other with/without correction	20/60
	Absolute visual acuity minimum	20/60 in either eye with or without corrective lenses.
	Are bioptic telescopes allowed?	Yes, permitted for best acuity as low as 20/200, with restrictions. 20/60 through telescope; 20/60 through carrier
Visual fields	Minimum field requirement	140° each eye; 140° both eyes
	Visual field testing device	Juno Vision machine
Color vision requirement	None	
Type of road test	N/A	
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes
	Written test required?	Not required for renewals
	Road test required?	Not required for renewals
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	Yes. Physicians should report patients with a diagnosed “conditions hazardous to driving”
Physician/medical reporting	Yes, physicians may report a person who has a handicap which would render the individual incapable of safely operating a motor vehicle
Immunity	No
Legal protection	No
DMV follow-up	Medical evaluation and retest
Other reporting	Will take information from anyone with knowledge that the driver may be medically or mentally unsafe.
Anonymity	No

Medical Advisory Board

Role of the MAB	The Medical Advisory Board advises agency personnel on individual medical reports and assists the agency in the decision making process.
Medical Review contact information	Department of Motor Vehicle Safety C/O Medical Unit PO Box 80447 Conyers, GA, 30013

Hawaii

Name of State & DMV contact information	Honolulu Division of Motor Vehicles & Licensing Drivers License Branch 1199 Dillingham Boulevard, Bay A-101 Honolulu, HI 96817 *www.co.honolulu.hi.us/mvl.index.htm*	808-532-7730

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 for better eye
	Are bioptic telescopes allowed?	Not allowed to meet visual field requirements, however permitted to use while driving
Visual fields	Minimum field requirement	70° one eye
	Visual field testing device	Eye testing machine or eye specialist certification
Color vision	Is there a color vision requirement?	No
Road test	N/A	
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	2, 4 or 6 years
	Renewal options and conditions	In person, or by mail
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	Only if necessary
Age-based renewal procedures	After age 72, must renew every 2 years. Age 15 to 17 every 4 years, age 18 to 71 every 6 years	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	No
Legal protection	No
DMV follow-up	Driver notified in writing of referral.
Other reporting	Will accept information from courts, police, other DMVs, and family members.
Anonymity	N/A

Medical Advisory Board

Role of the MAB	Action based on recommendation of majority.
Medical Review contact information	General Information: Department of Transportation 808-692-7656 Case Specific, County of Issue: Honolulu 808-532-7730 Hawaii: 808-961-2222 Kauai: 808-241-6550 Maui: 808-270-7363

Idaho

Name of State & DMV contact information	Idaho Transportation Department Division of Motor Vehicles, Driver Services PO Box 7129 Boise, ID 83707 *http://itd.idaho.gov/dmv/online_services.htm*	208-334-8735

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40 in better eye for unrestricted
	Absolute visual acuity minimum	license; 20/50-20/60 requires annual testing; 20/70 denied license
	Are bioptic telescopes allowed?	Yes, if acuity is 20/40 through lens, 20/60 through carrier
Visual fields	Minimum field requirement	None
Color vision requirement	None	
Type of road test	Annual road test may be required to coincide with vision or medical re-testing requirements	
Restricted licenses	Available	

License Renewal Procedures

Standard	Length of license validation	DL expires 5 days after age 18 and age 21. 4-year renewal age 21 and older. 8-year renewal for age 21 to 62.
	Renewal options and conditions	Mail in every other cycle, if 4 year DL, not CDL's
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	Only if requested by examiner, law Enforcement agency, family member or DMV. An annual road test may be required to coincide with vision or medical re-testing requirements.
Age-based renewal procedures	After age 69, no renewal by mail.	

Reporting Procedures

Physician/medical reporting	Yes (not specified)
Immunity	None
Legal protection	N/A
DMV follow-up	License suspended upon referral.
Other reporting	Will accept information from family members, other DMVs, and law enforcement officers.
Anonymity	Not anonymous or confidential

Medical Advisory Board

Medical Desk Technician	The medical information submitted is initially reviewed by employees within the Driver Support Division who work specifically with medical cases.
Role of the MAB	Idaho does not have an MAB.
Medical Review contact information	MVR/Medical Unit Supervisor can be reached at 208-334-8716

Illinois

Name of State & DMV contact information	Illinois Office of the Secretary of State Driver Services Department–Downstate 2701 S. Dirksen Parkway Springfield, IL 62723	217-785-0963
	Driver Services Department–Metro 17 N. State Street, Suite 1100 Chicago, IL 60602	312-814-2975
	www.sos.state.il.us/departments/drivers/drivers.html	

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in better eye unrestricted; 20/70 in better eye daylight only restrictions,
	Are bioptic telescopes allowed?	Yes, may have 20/100 in better eye and 20/40 through bioptic telescope.
Visual fields	Minimum field requirement	105° one eye, 140° both eyes
	Visual field testing device	Stereo optical testing machine
Color vision	Is there a color vision requirement?	No
Road test	Type of road test	On-road driving test
Restricted licenses	Yes: daytime, two outside mirrors	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	Mail in every other cycle for drivers with clean records and no medical report
	Vision testing required at time of renewal?	At in-person renewal only
	Written test required?	Every 8 years unless clean driving record
	Road test required?	Only for applicants age 75+
Age-based renewal procedures	Age 81–86 every 2 years, at age 87 reduce renewal to 1 year. Age 75+ no renewal by mail, vision test required, and on-road driving test required.	

Reporting Procedures

Mandatory medical reporting	Are physicians required/encouraged to report "unsafe" drivers?	Physicians are encouraged to inform patients of their responsibility to notify the Secretary of State of any medical conditions that may cause a loss of consciousness or affect safe operation of a motor vehicle within 10 days of becoming aware of the condition.
	Are physicians required to report patients with certain medical conditions?	No
Physician/medical reporting	Are physicians exempt from liability for civil damages caused by the patient if they report the patient to the DMV beforehand?	Yes
Immunity	Does the State offer the physician legal protection for breaking the patient's confidentiality?	N/A. Illinois is not a mandatory reporting State.
Legal protection	How does the DMV follow up?	Driver notified in writing of referral. Driver required to submit a favorable medical report. Determination of further action based on various scenarios.

Illinois

DMV follow-up	Aside from physicians, who else can report?	Will accept information from courts, foreign State DMVs, law enforcement, member of the IL Medical Advisory Board, NDR, PDPS, SOS management employee, FMCSA, driver rehabilitation specialist, or self-admission.
Other reporting	Does the DMV protect the identity of the reporter?	Yes
Anonymity	Does the DMV protect the identity of the reporter?	Yes

Medical Advisory Board

Role of the MAB	Review the medical report and make a determination as to the status of the driving privileges of the driver. Decision of the MAB implemented by the Secretary of State.
Medical Review contact information	Supervisor, Medical Review Unit Office of the Secretary of State Driver Services Department 2701 South Dirksen Parkway Springfield, IL 62723 217-785-3002

Indiana

Name of State & DMV contact information	Indiana Bureau of Motor Vehicles Medical Section Indiana Government Center North 100 N Senate Avenue. Room N402 Indianapolis, IN 46204 *www.mybmv.IN.gov*	317-233-6000

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40 minimum each eye without restrictions. 20/50 each eye with correction = glasses/contacts restriction required unless vision referral presented with approval from Medical Advisory Board specifying that corrective lenses will not improve acuity.
	Both eyes with/without correction	Indiana tests each eye individually
	If one eye blind—other with/without correction	One eye 20/40 other eye 20/50 through blind without correction = outside rearview mirrors restriction. One eye 20/40 other eye 20/50 through blind with correction = glasses/contacts, outside rearview mirrors restriction. One eye 20/50 other eye 20/70 through blind with correction = glasses/contacts, outside rearview mirrors and daylight driving only restrictions.
	Absolute visual acuity minimum	The absolute minimum visual acuity obtained by a customer service representative in order to issue a license is 20/70 in each eye with correction = glasses/contacts, outside rearview mirrors and daylight driving only restrictions for licensing. The BMV will license an individual with less acuity upon the recommendation of the Medical Advisory Board.
	Are bioptic telescopes allowed?	Yes, for acuity as low as 20/200 if 20/40 can be achieved with telescope = restrictions apply
Visual fields	Minimum field requirement	N/A for standard license renewal, 70° one eye, 120° both eyes (when required)
Color vision	Is there a color vision requirement?	N/A for standard renewal
Road test	Type of road test	Standardized road tests are administered by State examiners Special/courtesy drives tests (extended) are administered by a State senior examiner
Restricted licenses	A variety of restrictions are available—most common restriction is for corrective lenses	

* Testing (visual, written or skills) to obtain a 4-year commercial driver license is more stringent per Federal guidelines than for renewal of a standard operator license as stated here.

Indiana (continued)

License Renewal Procedures

Standard	Length of license validation	Standard length of license validation Operator License June 7th 2007–Dec. 31st 2007: 5 years Jan. 1st 2008–Dec. 31st 2008: 4 years Jan. 1st 2009: 6 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes (acuity)
	Written test required?	Yes, if new to State, if 6 or more points appear on the driving record, if expired more than 2 years or recommended by the Medical Advisory Board.
	Road test required?	Yes, if new from out of country, if out of State license is expired more than 1 year, if Indiana license is expired more than 3 years or in the event the bureau receives evidence of driving impairment
Age-based renewal procedures	Licenses issued to individuals under the age of 18 expire at midnight on the individuals' 21st birthday. Age 75–84, renewal cycle is reduced to 3 years Age 84 +, renewal cycle is reduced to 2 years.	

Reporting Procedures

Mandatory medical reporting	None
Physician/medical reporting	Drivers should self-report medical conditions that may cause lapse of consciousness, seizure, etc. Physicians are encouraged but not required to report to the bureau a patient who may have a medical condition that would adversely affect their ability to operate a motor vehicle safely.
Immunity	A physician licensed to practice medicine under IC 25-22.5, an optometrist licensed to practice optometry under IC 25-24, or an advanced practice nurse licensed under IC 25-23 who has personally examined the patient not more than thirty (30) days before making a report concerning the patient's fitness to operate a motor vehicle is not civilly or criminally liable for a report made in good faith to the: (1) bureau; (2) commission; or (3) driver licensing medical advisory board; concerning the fitness of a patient of the physician, optometrist, or advanced practice nurse to operate a motor vehicle in a manner that does not jeopardize the safety of individuals or property.
Legal protection	Applicable immunity law only.
DMV follow-up	Written notification.
Other reporting	Will accept information from courts, law enforcement, family members and other reliable sources
Anonymity	The BMV protects the identity of the reporter, unless information is required by a court of law

Medical Advisory Board

Role of the MAB	MAB advises the Bureau of Motor Vehicles on medical issues regarding individual drivers. Actions are based on the recommendation of the majority and/or specialist.
Medical Review contact information	Referrals can be faxed to 317-233-3138. Questions should be directed to 317-232-0901

Iowa

Name of State & DMV contact information	Iowa Department of Motor Vehicles IA DOT, Park Fair Mall 100 Euclid Avenue, PO Box 9204 Des Moines, IA 50306-9204 *www.dot.state.ia.us/mvd/*	515-237-3201

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/50 daylight driving only, 20/70 in better eye restricted license for daylight only up to 35 mph; 20/100 recommendation from vision specialist, if worse—recommendation from MAB; absolute minimum 20/200
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	140° both eyes. With outside mirrors 70°T + 45° N one eye, 115° both eyes. If less than 95° both eyes and 60°T+35°N one eye need MAB recommendation
Color vision	Is there a color vision requirement?	No
Road test	Type of road test	Non-fixed Course, general traffic
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	2 or 4 years
	Renewal options and conditions	In-person, extensions available if out of State for 6 months.
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	Yes, If physical or mental condition present
Age-based renewal procedures	At age 70, renewal every 2 years.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	A physician may report to the department of motor vehicles "the identity of a person who has been diagnosed as having a physical or mental condition which would render the person physically or mentally incompetent to operate a motor vehicle in a safe manner.
Immunity	Yes
Legal protection	Yes—321.186 A physician or optometrist making a report shall be immune from any liability, civil or criminal, which might otherwise be incurred or imposed as a result of the report
DMV follow-up	Driver notified in writing of referral. License suspended upon referral.
Other reporting	Will accept information from courts, other DMVs, police and family members.
Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	To review medical/vision reports as requested and advise of their recommendation to a person's capability to drive safely.	
Medical Review contact information	Iowa Department of Transportation Office of Driver Services PO Box 9204	Des Moines, IA 50306-9204 Phone 800-532-1121

Kansas

Name of State & DMV contact information	Kansas Division of Motor Vehicles, Driver Control Docking State Office Building 915 SW Harrison Street 1st Floor Topeka, Kansas 66625 *www.ksrevenue.org/dmvdrlic.htm*

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 better eye unrestricted, 20/60 better eye with doctor report, worse than 20/60 must demonstrate ability to operate a vehicle and safe driving record for 3 years.
	Are bioptic telescopes allowed?	Yes, with eye doctor's report.
Visual fields	Minimum field requirement	Worse than 110° with both eyes and 55° monocular
Color vision requirement	None	
Type of road test	Non-fixed course	
Restricted licenses	Up to 4 restrictions can be added, at doctors/examiners discretion. These can include: corrective lenses, daylight only, no interstate driving, outside business area, within city limits, mileage restriction in increments of 5 mi. up to 30, outside mirror, mechanical aid, automatic transmission, prosthetic aid, licensed driver in front seat.	

License Renewal Procedures

Standard	Length of license validation	6 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes
	Written test required?	Yes
	Road test required?	Yes, by examiner challenge or for visual acuity, or at medical doctor request.
Age-based renewal procedures	At age 65, renewal every 4 years. There is no age-based road test.	

Reporting Procedures

Mandatory medical reporting	No, statutes specify that physicians may not be required to volunteer information to the division or to the medical advisory board concerning the mental or physical condition of any patient
Physician/medical reporting	N/A
Immunity	Yes, people reporting in good faith are statutorily immunized from civil actions for damages caused by such reporting.
Legal protection	Patient has to sign a form to show it is ok for M.D. or O.D. to release information to DMV.
DMV follow-up	Driver is notified in writing of referral.
Other reporting	Will accept information from courts, other DMVs, police and family members, concerned citizens. Letters must be signed.
Anonymity	Yes. Letters of concern are confidential.

Medical Advisory Board

Role of the MAB	To help Director of Vehicles and Driver Review interpret conflicting information or action based on recommendation of specialists. Determine eligibility of hardest or borderline cases.
Medical Review contact information	Kansas Driver Review, Medical Advisory Board 915 SW Harrison Room 162 | Topeka, KS 66626 785-296-3601

Kentucky

Name of State & DMV contact information	Kentucky Division of Driver Licensing 200 Mero Street Frankfort, KY 40622 *www.kytc.state.ky.us/drlic*	502-564-0280

Licensing Requirements

Visual acuity	Each eye with/without correction	20/60
	Both eyes with/without correction	20/60
	If one eye blind—other with/without correction	20/60
	Absolute visual acuity minimum	20/60 with corrective lenses
	Are bioptic telescopes allowed?	Yes, with distance acuity of 20/60 or better using a bioptic telescopic device. KRS 186.578(1)c.
Visual fields	Minimum field requirement	Binocular horizontal field of vision of at least 35 degrees to the left and right side of fixation and a binocular vertical field of vision of at least 25 degrees above and below fixation.
	Visual field testing device	N/A
Color vision	Is there a color vision requirement?	No
Road test	Medical Advisory Board may recommend further examination or investigative testing.	
Restricted licenses	Available	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	Yes
Legal protection	None
DMV follow-up	Driver notified in writing of referral to medical advisory board.
Other reporting	Will accept information from courts, other DMVs, family members and police.
Anonymity	None

Medical Advisory Board

Role of the MAB	The medical advisory board identifies drivers with physical or mental impairments that impede their ability to safely operate a motor vehicle.
Medical Review contact information	Questions regarding medical review can be directed to 502-564-0280 ext. 2174. FAQs for medical review can be found at *http://transportation.ky.gov/DrLic/mrb/MRB.htm*

Louisiana

Name of State & DMV contact information	Louisiana Office of Motor Vehicles Drivers License Suspension Unit PO Box 64886 Baton Rouge, LA 70896 *www.expresslane.org*	225-925-3929

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in better eye unrestricted, 20/50-20/70 better eye with restrictions, 20/70-20/100 better eye with possible restricted license. Less than 20/100 for better eye refer to MAB
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	No
Color vision	Is there a color vision requirement?	No
Restricted licenses	Yes, daytime only, weather restrictions, radius limitation, no interstate driving	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person or mail in every other cycle, Internet, interactive voice response, unless license expired 6 months or more.
	Vision testing required at time of renewal?	Yes
	Written test required?	Yes, if expired one year or more
	Road test required?	Yes, if expired 2 years or more
Age-based renewal procedures	No renewal by mail for drivers over the age of 70	

Reporting Procedures

Mandatory medical reporting	No, there is no statutory provision requiring physicians to report patients
Physician/medical reporting	N/A
Immunity	Yes, a physician who provides such information has statutory immunity from civil or criminal liability for damages arising out of an accident.
Legal protection	Louisiana has statutory protection for good faith reporting of unsafe drivers.
DMV follow-up	Driver is notified in writing of referral.
Other reporting	DMV employee or agent in performance of duties, law enforcement officer, health care provider, or family member
Anonymity	An order from a court of competent jurisdiction required before identity of reporter can be released.

Medical Advisory Board

Role of the MAB	The medical advisory board identifies drivers with physical or mental impairments that impede their ability to safely operate a motor vehicle.
Medical Review contact information	Questions regarding medical review can be directed to 502-564-0280 ext. 2174. FAQs for medical review can be found at *http://transportation.ky.gov/DrLic/mrb/MRB.htm*

Maine

Name of State & DMV contact information	Maine Bureau of Motor Vehicles Attn: Medical Unit 29 State House Station Augusta, ME 04333-0029 *www.state.me.us/sos/bmv*	209-624-9000

Licensing Requirements

Visual acuity	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70 with restrictions
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	110° both eyes-Class D only
	Visual field testing device	Keystone View
Color vision requirement	None	
Type of road test	Assesses general driving skills	
Restricted licenses	Yes: daytime only, radius from home, special equipment	

License Renewal Procedures

Standard	Length of license validation	6 years
	Vision testing required at time of renewal?	At age 40, 52, 65 and every 4 years thereafter
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	At age 65, renew every 4 years.	

Reporting Procedures

Mandatory medical reporting	Yes
Physician/medical reporting	Yes
Immunity	Yes
Legal protection	Yes
DMV follow-up	Requires a medical evaluation form to be completed by a physician at periodic intervals
Other reporting	Will accept information from courts, other DMVs, police, family members and other resources
Anonymity	Yes, but identity may be revealed at an administrative hearing if requested.

Medical Advisory Board

Role of the MAB	The Medical Advisory Board reviews the medical information submitted whenever a person contests a Division action. Reports received or made by the Board are confidential and may not be disclosed unless the individual gives written permission
Medical Review contact information	The Medical Review Coordinator can be reached at 207-624-9101

Maryland

Name of State & DMV contact information	Maryland Motor Vehicle Administration 6601 Ritchie Highway, NE Glen Burnie, MD 21062 *www.marylandmva.com*	301-729-4550 or 800-950-1682

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	If one eye blind—other with correction	20/40
	Absolute visual acuity minimum	20/70 in better eye for restricted; 20/70-20/100 requires special permission from MAB.
	Are bioptic telescopes allowed?	Yes: daytime only, outside mirrors 20/70 through telescope. 20/100 through carrier lens.
Visual fields	Minimum field requirement	Continuous field of vision at least 140E in each eye unrestricted; 70° (+/- 35°)/110°
	Visual field testing device	Stereo Optical Optec 1000 vision screener
Color vision requirement	Only for commercial drivers	
Type of road test	N/A	
Restricted licenses	Yes: daytime only, outside mirrors for low vision drivers	

License Renewal Procedures

Standard	Length of license validation	5 year
	Renewal options and conditions	In-person
	Vision testing required at time of renewal?	Yes (binocular, acuity, peripheral)
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	Are there any age-based license renewal procedures?	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Maryland law provides for the discretionary reporting to the Motor Vehicle Administration of people who have “disorders characterized by lapses of consciousness”
Immunity	Yes, a civil or criminal action may not be brought against any person who makes a report to the Medical Advisory Board and who does not violate any confidential or privileged relationship conferred by law.
Legal protection	Action may not be brought against any person who makes a report to the Medical Advisory Board and does not violate any confidential or privileged relationship conferred by law.
DMV follow-up	Driver is notified in writing of referral. License is suspended and further examination is required.
Other reporting	Will accept information from court, other DMVs, police, family members and other resources.
Anonymity	Yes, if requested

Medical Advisory Board

Role of the MAB	The MAB advises the Motor Vehicle Administration regarding medical review for fitness to drive through its Division of Driver Wellness and Safety.
Medical Review contact information	Manager, Driver Wellness & Safety Division, Maryland Motor Vehicle Administration 6601 Ritchie Highway, NE | Glen Burnie, MD 21062 410-424-3644; Fax: 410-768-7627

Massachusettes

Name of State & DMV contact information	Massachusetts Medical Affairs PO Box 199100 Boston, MA 02119 *www.state.ma.us/rmv/index.htm*	617-351-9222

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	N/A
	Absolute visual acuity minimum	20/40 better eye unrestricted; 20/50-2070 in better eye results in daylight only restriction.
	Are bioptic telescopes allowed?	Yes. As long as 1) The peripheral vision is at least 120; 2) Vision is corrected to 20/40 through the bioptic and 20/100 through the carrier lens. Also, must have at least 20/100 in the other eye. The bioptic must meet certain requirements: it must be monocular, fixed focus, no greater than 3X magnification, and must be an "integral part of the lens"
Visual fields	Minimum field requirement	120°
	Visual field testing device	Optec 1000 Vision Testing Machine
Color vision requirement	Yes—distinguish red, green and amber	
Type of road test	N/A	
Restricted licenses	Yes: daytime only	

License Renewal Procedures

Standard	Length of license validation	5 Years
	Renewal options and conditions	In person, or via Internet.
	Vision testing required at time of renewal?	Yes
	Written test required?	No; however DMV reviews on case-by-case basis and if indicated will administer test.
	Road test required?	No; however DMV reviews on case-by-case basis and if indicated will administer test.
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No, MA is a self-reporting State, meaning it is the responsibility of the driver to report to the RMV any medical condition that may impair driving ability.
Physician/medical reporting	Yes, physicians are encouraged to report unfit drivers to the RMV.
Immunity	No, the law does not provide any protection from liability, nor does it promise confidentiality due to "Public Records" law which states simply that a driver is entitled to any information upon receipt of written approval.
Legal protection	No, see "Immunity"

Massachusettes (continued)

DMV follow-up	If report comes from family or member of public it must be in writing and signed. If report is accepted, then driver contacted by mail and asked to obtain medical clearance to certify that he/she is safe to drive. If DMV does not receive a response within 30 days a second request is mailed. If still no response, a license revoked. If report is from law enforcement or physician, it is considered "immediate threat." Driver is contacted by mail and requested to voluntarily surrender license or submit medical clearance within 10 days. If no response, license revoked.
Other reporting	Will accept information from court, other DMVs, police, family members and other resources.
Anonymity	No, see "Immunity"

Medical Advisory Board

Role of the MAB	The purpose is to provide guidance to the Registry when a medical issue has been raised regarding the ability of applicants for learner's permits and licenses to operate a motor vehicle and for those whose privileges to operate a motor vehicle has been (or should be) restricted, suspended or revoked. One of our goals in consulting with the MAB on matters requiring medical expertise is to bring consistency to these decision making processes.
Medical Review contact information	Registry of Motor Vehicles Director of Medical Affairs PO Box 55889 Boston, MA 02205-5889 Attn: Director of Medical Affairs Fax: 617-351-9223

Michigan

Name of State & DMV contact information	Michigan Department of State Driver Assessment and Appeal Unit PO Box 30196 Lansing, MI 48909-7696 *www.michigan.gov/sos*	517-335-7051 phone 517-335-2189 fax

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40 to and including 20/50
	If one eye blind—other with/without correction	20/50
	Absolute visual acuity minimum	Minimum of 20/70 in better eye with no progressive abnormalities of the eye, daylight only restriction; Minimum of 20/60 in better eye if progressive abnormalities or disease of the eye, daylight only restriction.
	Are bioptic telescopes allowed?	Yes, will require a road test for all first-time users.
Visual fields	Minimum field requirement	110°-140° both eyes; less than 110° to/including 90° additional conditions and requirements; less than 90 degrees, no driving allowed.
	Visual field testing device	Optic 1000 DMV Vision Tester
Color vision requirement	No	
Type of road test	Standardized course and requirements with various locations throughout the State	
Restricted licenses	Yes. Restrictions are based on review of medical input and reexamination testing. Examples include radius driving, daylight only driving, no expressway driving.	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	Mail in every other cycle, if free of convictions
	Vision testing required at time of renewal?	Yes
	Written test required?	No. A written test is not required at the time of renewal. It may be required at driver assessment re-examinations and to obtain an original license.
	Road test required?	Yes, if license expired more than 4 years.
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are encouraged to report unsafe drivers to the Department of State for evaluation.
Immunity	No
Legal protection	No
DMV follow-up	The driver is notified in writing of the request for evaluation. The Department may require the driver to submit updated medical information and to appear for reexamination and testing. The testing includes a vision screening, written exam, and on-road driving evaluation.
Other reporting	The Department accepts requests for driver evaluation from family, police, public officials and any other concerned persons who have knowledge of a driver's inability to drive safely or health concerns that may affect his/her driving ability.

Michigan (continued)

Anonymity	The Department of State cannot accept anonymous requests for driver evaluation. The requestor must include his/her name, address, daytime phone number and signature. The Department would protect the identity of the author of the request for driver evaluation to the extent allowed by law.

Medical Advisory Board

Role of the MAB	Current medical reviews are based on recommendation of specialist. The Department of State is in the process of reestablishing a Medical Advisory Board. The Department intends for the MAB to review current Department medical review processes and establish updated guidelines for the medical review of Michigan drivers.
Medical Review contact information	Driver Assessment and Appeal Division can be reached at 517-335-7051.

Minnesota

Name of State & DMV contact information	Minnesota Medical Unit 445 Minnesota Street, Suite 170 Town Square Building St. Paul, MN 55101-5170 *www.dps.state.mn.us/dvs/index.html*	651-296-2021

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70 in better eye with speed limitations, 20/80 referred to a driver evaluation unit; 20/100 denied license
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	105° unrestricted
	Visual field testing device	Yes, at renewal
Color vision requirement	No	
Type of road test	20/80, special test with driver exam supervisor	
Restricted licenses	Yes: daytime, area restriction, speed, no freeway	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes
	Written test required?	Only if driver license expired more than 1 year
	Road test required?	If driver license is expired more than 5 years
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physician reporting is encouraged
Immunity	Yes
Legal protection	Not addressed in driver licensing laws
DMV follow-up	Driver is notified in writing of referral. License is suspended upon referral and further examination is conducted.
Other reporting	Will accept information from court, other DMVs, police, family members and other resources.
Anonymity	Yes, unless court subpoenas record

Medical Advisory Board

Role of the MAB	Action is based on recommendation of majority.
Medical Review contact information	Minnesota Department of Public Safety Medical Unit 445 Minnesota Street, Suite 170 St. Paul, MN 55101-5170 651-296-2021

Mississippi

Name of State & DMV contact information	Mississippi Driver Improvement PO Box 958 Jackson, MS 39205 *www.dps.state.ms.us*	601-987-1231

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	Absolute visual acuity minimum	20/70 daytime
	Are bioptic telescopes allowed?	Yes, 20/70 with telescope
Visual fields	Minimum field requirement	140° unrestricted; one eye T 70°; N 35° with 2 outside mirrors
Color vision requirement	No	
Type of road test		
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No (an exception can be made if examiner feels testing is warranted)
Age-based renewal procedures	Those 71 and older are not allowed to do on-line renewal.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	
Immunity	No
Legal protection	
DMV follow-up	Patient is called into DMV office for road and vision test when they receive a report from any source.
Other reporting	Will accept information from court, other DMVs, police and family members.
Anonymity	Yes, granted for all reporters.

Medical Advisory Board

Role of the MAB	In situations where the DMV is unsure, cases are reviewed by an external medical panel convened by the State medical board.
Medical Review contact information	The medical board can be reached at 601-853-6733 Questions about referrals to the DMV should go to 601-987-1231

Missouri

Name of State & DMV contact information	Missouri Drivers License Bureau Attn: Medical Review PO Box 200 Jefferson City, MO 65105 *http://dor.mo.gov/mvdl/drivers/*	573-751-2730

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/50
	Absolute visual acuity minimum	20/160 for restricted
	Are bioptic telescopes allowed?	Not for meeting vision requirements but can be used for skills tests and while driving
Visual fields	Minimum field requirement	55° or better in both eyes; 85° in one eye with restrictions
	Visual field testing device	Objective/Quantitative
Color vision requirement	No	
Restricted licenses	Yes. As long as they meet the vision requirements, we have restrictions for equipment, speed, radius, (location of driving) time of day and/or length of time driving. Virtually any restriction a doctor or examiner recommends.	

License Renewal Procedures

Standard	Length of license validation	6 years
	Renewal options and conditions	In person, or renewal by mail if out of State.
	Vision testing required at time of renewal?	Yes
	Written test required?	Only if license is expired for more than 6 months (184 days) or if an individual is cited and after the review process a written test could be required.
	Road test required?	See written test requirement above.
Age-based renewal procedures	At age 70, reduction in renewal cycle to 3 years. Also, any school bus driver 70 or older must renew their School Bus Permit annually. Below 70, renewal is every 3 years.	

Reporting Procedures

Mandatory medical reporting	Not mandatory but encouraged for any condition that could impair or limit a person's driving ability. A form is available (form 1528, Physician's Statement) but not required. Forms are available at the Department of Revenue, P.O. Box 200 Jefferson City, Mo 65105-0200. Attention Medical Review.
Physician/medical reporting	Medical professionals will not be prevented from making a report because of their physician-patient relationships 302.291.
Immunity	Yes, an individual is immune from civil liability when they have made a report in good faith.
Legal protection	See Physician Reporting Laws above.
DMV follow-up	Depending on the information received, we may ask for additional information, add restrictions, require a written exam, skills test, vision exam, physical exam or deny the privilege.
Other reporting	Will accept information from court, DMV clerks, peace officers, social workers and family members within three degrees of consanguinity.
Anonymity	Yes

Missouri (continued)

Medical Advisory Board

Role of the MAB	The Medical Advisory Board evaluates each case on an individual basis. The medical information is reviewed by staff personnel of the Driver's License Bureau. The MAB relies on the person's physician's opinion on whether the applicant or licensee can drive safely. Action is based on recommendation of majority.
Medical Review contact information	Attention Medical Review Department of Revenue P.O. Box 200 Jefferson City, Mo 65105-0200 573-751-2730 Fax: 573-522-8174 *http://dor.mo.gov/mvdl/drivers/faq/doctor.htm*

Montana

Name of State & DMV contact information	Montana Motor Vehicles Division Medical Unit PO Box 201430 Helena, MT 59620-1430 *www.doj.mt.gov/driving/default.asp*	406-444-4536

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70 in better eye with restrictions on daylight and speed; 20/100 in better eye, with possible restricted license.
	Are bioptic telescopes allowed?	Yes, 20/100 through carrier lens
Visual fields	Minimum field requirement	Only for commercial drivers
	Visual field testing device	Optic 1000
Color vision requirement	Commercial only	
Type of road test	Figure-8, 3 left and 3 right turns, 2 stop signs, through intersection and parallel parking.	
Restricted licenses	Yes	

License Renewal Procedures

Standard	Length of license validation	8 years; if renewing by mail a 4 year license is issued—next renewal requires a personal appearance by the applicant. Commercial licenses are now only good for 5 years.
	Vision testing required at time of renewal?	Yes
	Written test required?	Discretion of examiner if safe operation of the motor vehicle is in question.
	Road test required?	Same as written requirement
Age-based renewal procedures	For ages 68 to 74, renewal cycle reduced to 1–6 years. At age 75, renewal cycle is reduced to 4 years.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are encouraged to report
Immunity	Yes, There is a statute giving the physician immunity from liability for reporting in good faith any patient whom the physician diagnoses as having a condition that will significantly impair the patient's ability to safely operate a motor vehicle. No action may be brought against a physician for not making such a report.
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	State is required to tell person who reported them, if asked.

Medical Advisory Board

Role of the MAB	Montana does not have a Medical Advisory Board
Medical Review contact information	Supervisor Records and Control Bureau 303 North Roberts Helena, Montana 59620

Nebraska

Name of State & DMV contact information	Nebraska Department of Motor Vehicles Driver License Examining Division PO Box 94726 Lincoln, NE 68509 *www.dmv.state.ne.us*	402-471-3861

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70, the other eye not blind; 17 restrictions are used, depending on vision in each eye
	Are bioptic telescopes allowed?	Yes, 20/70 minimum through telescope
Visual fields	Minimum field requirement	Less than 100° denied, 140° both eyes
	Visual field testing device	Vision Machine
Color vision requirement	Commercial only	
Type of road test	On the road test that includes requirements such as emergency stop, right turns, left turns, etc.	
Restricted licenses	Yes, Nebraska offers restricted licenses.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Must apply in person before a driver license employee. Individuals who reside out-of-state during their renewal time may renew via mail.
	Vision testing required at time of renewal?	Yes
	Written test required?	Only if license is expired over 1 year or license is suspended, revoked or cancelled.
	Road test required?	Only if license is expired over 1 year or license is suspended, revoked or cancelled.
Age-based renewal procedures	No. Nebraska does not have age-based renewal regulations.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes, encouraged but not required.
Immunity	No
Legal protection	No
DMV Follow-up	Drivers are notified by certified mail that they must appear for retesting. Drivers are also required to bring in a vision and medical statement that has been completed by their physicians within the last 90 days.
Other reporting	Will accept information from law enforcement and other concerned parties.
Anonymity	Yes, unless the driver appeals the denial or cancellation of their license to District Court.

Nebraska (continued)

Medical Advisory Board

Role of the MAB	To provide advice to the Department concerning the physical a mental ability of an applicant or holder of an operator's license to operate a motor vehicle.
Medical Review contact information	Driver's License Administrator Nebraska Department of Motor Vehicles P.O. Box 94789, 301 Centennial Mall South Lincoln, NE 68509

Nevada

Name of State & DMV contact information	Nevada Department of Motor Vehicles Management Services and Programs Division 555 Write Way Carson City, NV 89711 *www.dmvnv.com*	775-684-4717

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/50, other eye no worse than 20/60 daylight driving only.
	Are bioptic telescopes allowed?	Yes, 20/40 through telescope, 20/120 through carrier, 130 E visual field.
Visual fields	Minimum field requirement	Binocular 140° unrestricted Binocular 110°-140° restricted
Color vision requirement	None	
Type of road test	Yes, if the vision specialist's report does not meet the 20/40 standard but within the minimum (restricted) acuity levels for licensing.	
Restricted licenses	Yes; daytime only	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	Mail-in or Internet every other cycle.
	Vision testing required at time of renewal?	Yes
	Written test required?	Only if license classification has changed
	Road test required?	Only if license classification has changed
Age-based renewal procedures	Vision test and medical report required to renew by mail at age 70.	

Reporting Procedures

Mandatory medical reporting	Yes. Physicians are required to report patients diagnosed with epilepsy or any seizure disorder or lapse of consciousness
Physician/medical reporting	Yes
Immunity	Yes
Legal protection	Yes
DMV follow-up	Letters and suspensions
Other reporting	Court, other DMVs, police and family members.
Anonymity	Yes

Medical Advisory Board

Role of the MAB	Advisory role to DMV. Developing medical and health standards. Advisory role regarding medical reports submitted to determine the mental or physical condition of the applicant. The department has the authority to have a Medical Advisory Board due to Nevada Administrative Code 483.380. However, due to the cost, Nevada has been unable to have such an advisory board in place.
Medical Review contact information	Questions about medical review can be directed to 775-684-4717.

New Hampshire

Name of State & DMV contact information	New Hampshire Department of Motor Vehicles Directors Office 10 Hazen Drive Concord, NH 03305 *www.state.nh.us/dmv*	603-271-2371

Licensing Requirements

Visual acuity	Vision in both eyes	20/40
	Vision in one eye	20/30
	Absolute visual acuity minimum	20/70, restricted to daytime only
	Are bioptic telescopes allowed?	Yes
Visual fields	Minimum field requirement	No
	Visual field testing device	Snellen Eye chart or Stereo Optical Viewer
Color vision requirement	No	
Type of road test	Yes, on road practical	
Restricted licenses	Yes, daytime only	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In-person
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No special requirements for age.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are encouraged to report
Immunity	N/A
Legal protection	No, as reporting is not a requirement
DMV follow-up	Full re-examination and in some cases an administrative hearing
Other reporting	Will accept information from court, other DMVs, police, and family members.
Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	None
Medical Review contact information	Department of Safety Division of Motor Vehicles Driver Licensing 23 Hazen Drive Concord NH 03305 603-271-2371

New Jersey

Name of State & DMV contact information	New Jersey Division of Motor Vehicles Medical Division PO Box 173 Trenton, NJ 08666 *www.njmvc.gov*	609-292-4035

Licensing Requirements

Visual acuity	Each eye with/without correction ..... 20/50 Both eyes with/without correction ..... 20/50 If one eye blind—other with/without correction ..... 20/50 Absolute visual acuity minimum ..... 20/50 Are bioptic telescopes allowed? ..... Yes, 20/50 through telescope
Visual fields	Minimum field requirement ..... No Visual field testing device ..... N/A
Color vision requirement	Yes—new drivers (not cause for denial)
Type of road test	Standardized
Restricted licenses	Yes

License Renewal Procedures

Standard	Length of license validation ..... 4 years Renewal options and conditions ..... In-person digitized photos were implemented in 2003. Vision testing required at time of renewal? ..... Only if recommended. Written test required? ..... If recommended by examiner Road test required? ..... If recommended by examiner
Age-based renewal procedures	No

Reporting Procedures

Mandatory medical reporting	Yes. Only for cases of recurrent loss of consciousness
Physician/medical reporting	Physicians are required to report patients who experience convulsive, seizures, recurrent periods of unconsciousness, impairment or loss or loss of motor coordination.
Immunity	Yes
Legal protection	No
DMV follow-up	A medical review is generated. Results of the medical review may result in suspension of license; the driver may request an appeal.
Other reporting	Will accept information from police, family, other agencies, courts, and other concerned persons. MVC will not generate a letter based on an anonymous letter.
Anonymity	No

Medical Advisory Board

Role of the MAB	New Jersey has forms for each type of medical condition that may be cause for concern. Form is completed by driver's physician. In problem cases, then passed on to the Medical Advisory Board. MAB is a multidisciplinary group of physicians who then make licensing recommendations based on information.
Medical Review contact information	New Jersey Division of Motor Vehicles 609-292-7500 ext. 5032 Medical Division PO Box 173 Trenton, NJ 08666

New Mexico

Name of State & DMV contact information	New Mexico Motor Vehicles Division Driver Services, Attn: Medical PO Box 1028 Santa Fe, NM 87504-1028 *www.state.nm.us/*	505-827-2296

Licensing Requirements

Visual acuity	Each eye with/without correction ..... 20/40 Both eyes with/without correction ..... 20/40 If one eye blind—other with/without correction ..... 20/40 Absolute visual acuity minimum ..... 20/80 better eye with restrictions Are bioptic telescopes allowed? ..... No
Visual fields	Minimum field requirement ..... 120°E, 30° in nasal field of one eye Visual field testing device ..... Normal Ophthalmic Procedures
Color vision requirement	No
Type of road test	
Restricted licenses	Yes

License Renewal Procedures

Standard	Length of license validation ..... 4 or 8 years Renewal options and conditions ..... Vision testing required at time of renewal? ..... Yes Written test required? ..... May be required Road test required? ..... May be required
Age-based renewal procedures	Drivers may not apply for 8-year renewal, if they turn 75 during the last 4 years of the 8-year period. Becomes 1-year renewal after age 75.

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes
Immunity	Yes
Legal protection	No
DMV follow-up	By notice, drivers are informed that their licenses will be cancelled in 30 days unless they provide a medical report clearing them to drive. If they do not provide reports, their licenses are cancelled.
Other reporting	Will accept information from court, other DMVs, police, and family members.
Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	Periodic medical updates required by drivers with certain medical conditions including epilepsy, diabetes, and certain heart conditions. The DMV learns of an individual's condition through questions asked on the application
Medical Review contact information	New Mexico MVD Driver Services Bureau can be reached at 505-827-2296.

New York

Name of State & DMV contact information	New York Department of Motor Vehicles Attn: Driver Improvement Bureau 6 Empire State Plaza Albany, NY 12228 *www.nydmv.state.ny.us*	518-474-0841

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	For applicants with visual acuity less than 20/40 but not less than 20/70, can complete form MV-80L and submit for licensing consideration.
	Are bioptic telescopes allowed?	Yes
Visual fields	Minimum field requirement	20/40-20/70 best corrected requires 140 E horizontal visual fields; 20/80-20/1000 best corrected requires minimum 140 E horizontal visual field plus 20/40 through bioptic telescope lens
	Visual field testing device	Eye chart
Color vision requirement	No	
Type of road test	Standard road test, includes basic maneuvers needed for everyday driving.	
Restricted licenses	Yes: daytime only, radius from home, annual vision update	

License Renewal Procedures

Standard	Length of license validation	8 years
	Renewal options and conditions	Mail or in person
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	No
Legal protection	N/A
DMV follow-up	If a physician reports a condition that can affect the driving skills of a patient, the DMV can suspend the driver license. The DMV suspends the driver license until a physician provides a certification that the condition has been treated or controlled and does not affect driving skills If the DMV receives a report from a source who is not a physician the DMV decides each case separately.
Other reporting	Will accept information from court, other DMVs, police, family members and other resources. Letters must be signed.
Anonymity	If a person in a professional or official position (i.e., physician), the DMV does disclose the name of the person who sent the report however if the reporter does not fall under this category, under the Freedom of Information Law, the identity is protected.

New York (continued)

Medical Advisory Board

Role of the MAB	The medical advisory board advises the commissioner on medical criteria and vision standards for the licensing of drivers.
Medical Review contact information	Referrals for reexamination must be made in writing to: New York State Department of Motor Vehicles Medical Review Unit Room 220 6 Empire State Plaza Albany, NY 12228-0220 Information about the forms and procedures can be found at *www.nydmv.state.ny.us/license.htm#drivermed*

North Carolina

Name of State & DMV contact information	North Carolina Division of Motor Vehicles Driver License Medical Division 1100 New Bern Ave. Raleigh, NC 27697 *www.dmv.dot.state.nc.us*	919-861-3809

Licensing Requirements

Visual acuity	Each eye without correction	20/40
	Both eyes without correction	20/40
	Each eye with correction	20/50
	Both eyes with correction	20/50
	If one eye blind—other with/without correction	20/30 or better
	Absolute visual acuity minimum	20/100; 20/70 if one eye blind
	Are bioptic telescopes allowed?	No. However, there is a medical appeal process if requested.
Visual fields	Minimum field requirement	60° in one eye (30° on each side
	Visual field testing device	Keystone; Stereo Optic 1000
Color vision requirement	No	
Type of road test	Standardized road test, certain tasks must be completed to pass.	
Restricted licenses	Yes: daytime, speed restrictions, no interstate driving.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	Yes
	Written test required?	Yes
	Road test required?	No
Age-based renewal procedures	60+ are not required to parallel park on road test.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are encouraged to report unsafe drivers.
Immunity	Yes, North Carolina statutes protect the physician who reports an unsafe driver.
Legal protection	No
DMV follow-up	Driver is notified in writing of referral.
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources, as long as they are signed.
Anonymity	No, however must request records in writing.

Medical Advisory Board

Role of the MAB	Action is based on majority and/or opinion of specialist. Medical physicians review all medical information that is submitted to the DMV. If more information is necessary, can issue a request. Board decides what action should be taken. This action can be appealed.
Medical Review contact information	Medical Review Unit 3112 Mail Service Center Raleigh, NC 27697 Fax 919-733-9569

North Dakota

Name of State & DMV contact information	North Dakota Department of Transportation Drivers License and Traffic Safety Division Attn: Chief Examiner 608 East Boulevard Avenue Bismarck, ND 58505 *www.dot.nd.gov/*	701-328-2601

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/80 better eye if 20/100 in other eye
	Are bioptic telescopes allowed?	Yes: 20/130 in carrier, 20/40 in telescope, full peripheral field
Visual fields	Minimum field requirement	Both eyes 105°
	Visual field testing device	OPTEC 1000 Vision Tester
Color vision requirement	No	
Type of road test	N/A	
Restricted licenses	Yes: daytime, pending a sight-related road test, area and distance restriction	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	N/A
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No, physicians may report. Submit letter to the Drivers License and Traffic Safety Division
Physician/medical reporting	There is a law giving physicians permission to report to the ND Department of Transportation in writing, the name, date of birth, and address of every patient over the age of 14 whom they have reasonable cause to believe is incapable, due to physical or mental reason, of safely operating a motor vehicle
Immunity	Yes, physicians who in good faith make a report or give an opinion or recommendation or participate in any proceeding pursuant to this law, are immune from liability.
Legal protection	ND Century Code addresses medical advice provided by physicians.
DMV follow-up	Vision and/or medical reports
Other reporting	Will accept information from court, other DMVs, police and family members.
Anonymity	No

Medical Advisory Board

Role of the MAB	Action based on recommendation of majority and/or specialist. MAB is used when drafting Administrative rules.
Medical Review contact information	Drivers License and Traffic Safety Division staff can be reached at 701-328-2070

Ohio

Name of State & DMV contact information	Ohio Driver License Information Unit Ohio Bureau of Motor Vehicles, Attn: Medical Unit PO Box 16784 Columbus, OH 43216-6784 *www.bmv.ohio.gov*	614-752-7500

Licensing Requirements

Visual acuity	Each eye with/without correction	20/200 or better
	Both eyes with/without correction	20/40 or Better: Unrestricted Driving 20/50 – 20/70: Daylight Driving Only Worse than 20/70: No Driving Privileges
	If one eye blind—other with/without correction	Primary eye no worse than 20/200 Deficient eye: Worse than 20/300
	Both eyes with/without correction when one eye is blind	20/30 or Better: Unrestricted Driving 20/40 – 20/60: Daylight Driving Only Worse than 20/60: No Driving Privileges
	Absolute visual acuity minimum	20/70 through telescope, 20/200 through carrier lens.
	Are bioptic telescopes allowed?	Yes: 20/70 through telescope, 20/200 through carrier lens.
Visual fields	Minimum field requirement	Each eye must have 70° temporal reading
	Visual field testing device	Keystone Vision II
Color vision requirement	Yes	
Type of road test	Standardized course	
Restricted licenses	Right or left outside mirror restrictions for persons who are unable to obtain the required minimum Temporal field requirement of 70 degrees in each eye but has a visual field of 70∞ Temporal and 45∞ nasal readings (mirror required on the side that does not have 70 ∞ Temporal). Persons with certain medical or physical conditions may be required to furnish periodic medical statements or take periodic drivers license examinations.	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In person or renewal by mail only if out of State.
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No, however we will accept and take action on information submitted by a physician on an unsafe driver. The doctor must agree to be our source of information and allow us to divulge this information to the driver.
Immunity	No
Legal protection	No
DMV follow-up	Letter is sent requiring driver to submit a medical statement and/or take a driver license examination. Driver is given 30 days to comply.
Other reporting	Will accept information regarding unsafe drivers from courts, law enforcement agencies, hospitals, rehabilitation facilities, family and friends. The person or facility making the report must agree to be our source of information and allow us to divulge this information to the driver.
Anonymity	Not confidential

Ohio (continued)

Medical Advisory Board

Role of the MAB	No medical advisory board. Ohio has a medical consultant to contact for assistance with difficult cases or policy-making assistance.
Medical Review contact information	Information on making referrals can be obtained through the contacts above.

Oklahoma

Name of State & DMV contact information	Oklahoma Driver Improvement Division Department of Public Safety Attn: Medical PO Box 11415 Oklahoma City, OK 73136 *www.dps.state.ok.us/dls/*	405-425-2059

Licensing Requirements

Visual acuity	Each eye with/without correction	20/60
	Both eyes with/without correction	20/60
	If one eye blind—other with/without correction	20/50
	Absolute visual acuity minimum	20/100 for better eye with restrictions
	Are bioptic telescopes allowed?	Not permitted. Laws will not allow for consideration of licensing or restrictions.
Visual fields	Minimum field requirement	Both eyes, 70° in the horizontal meridian.
	Visual field testing device	Yes
Color vision requirement	No	
Type of road test	Non-fixed course	
Restricted licenses	Yes, physician recommendations such as daylight driving only, speed limitations, or local driving only	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	In-person
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes, any physician participating in good faith and without malicious intent in making a report of an unsafe driver shall have immunity from civil liability that might otherwise be incurred.
Immunity	Yes
Legal protection	By statute the physician has full immunity.
DMV follow-up	Driver is notified in writing of referral, required to appear for an interview at the Department. Requires a current medical evaluation from qualified practitioner as determined a full review examination.
Other reporting	Will accept information from any verifiable source with direct knowledge of the medical condition that would render the driver unsafe.
Anonymity	No

Medical Advisory Board

Role of the MAB	Action is based on the recommendation of the majority and/or specialist.
Medical Review contact information	Department of Public Safety Executive Medical Secretary PO Box 11415 Oklahoma City, OK 73136

Oregon

Name of State & DMV contact information	Oregon Department of Motor Vehicles Attn: Driver Programs Section, Medical Program Coordinator 1905 Lana Avenue NE Salem, OR 97314 *www.oregon.gov/ODOT/DMV/ATRISK/index.shtml*	503-945-5000

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/70 better eye with restrictions
	Are bioptic telescopes allowed?	Bioptic-telescopic lenses are not permitted to meet acuity standards; however, may be used while driving. Must pass vision test with carrier lens only.
Visual fields	Minimum field requirement	110° in horizontal (one or both eyes
	Visual field testing device	Both Keystone Driver Vision Screening System & OPTEC Vision Screening Instruments are used.
Color vision requirement	No	
Type of road test	Standardized course	
Restricted licenses	Yes. Daytime driving only for vision between 20/40 and 20/70	

License Renewal Procedures

Standard	Length of license validation	8 years
	Renewal options and conditions	In person renewal. A "valid without photograph" license may be issued if the person is temporarily out of State at the time of license renewal.
	Vision testing required at time of renewal?	After age 50
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	After age 50, vision screening every 8 years.	

Reporting Procedures

Mandatory medical reporting	Oregon's mandatory medical reporting system is not based solely on diagnosis or medical condition. Physicians and health care providers meeting the definition of "primary care provider" are required to report persons presenting functional and/or cognitive impairments that are severe and cannot be corrected/controlled by surgery, medication, therapy or driving device or technique.
Physician/medical reporting	ORS 807.710 addresses mandatory reporting by physicians and other health care providers. Oregon also has a voluntary reporting system that can be utilized by physicians and other medical providers. This reporting system is not required by law.
Immunity	Under the mandatory reporting system, the law provides the primary care provider with immunity from civil liability.
Legal protection	By Oregon law, a report filed under the mandatory reporting system is confidential and may not be admitted as evidence in any civil or criminal action.

Oregon (continued)

DMV follow-up	In most cases, drivers reported under the mandatory system have their driving privileges immediately suspended. A driver may request the opportunity to demonstrate ability to safely operate a motor vehicle via knowledge and drive tests. For cognitive impairments (and for specific functional impairments), medical file and driving record is sent to the State Health Office for determination of whether or not it is safe at this point in time. The majority of reports received under the voluntary reporting system will not result in an immediate suspension action. Instead, these drivers will be given 30–60 days to pass DMV tests and/or submit medical information before a suspension action is taken.
Other reporting	Under the voluntary system, DMV will accept information from court, other DMVs, law enforcement, physicians, family members and other sources.
Anonymity	Under the mandatory system, only the medical information being reported is confidential. Under the voluntary system, DMV will make every attempt to hold the reporter's name confidential if requested.

Medical Advisory Board

Role of the MAB	Oregon does not have a Medical Advisory Board. DMV's Medical Determination Officer reviews medical cases and makes determination on an individual's medical condition and ability to drive. Cases can be referred to the Health Department for advice.
Medical Review contact information	DMV-Driver Programs Section 503-945-5295 Attn: Medical Program Coordinator 1905 Lana Avenue NE Salem, OR 97314

Pennsylvania

Name of State & DMV contact information	Pennsylvania Department of Transportation Attn: Medical Unit PO Box 68682 Harrisburg, PA 17106 *www.dmv.state.pa.us/centers/olderDriverCenter.shtml*	717-787-9662

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in better eye unrestricted, up to 20/100 combined vision restricted
	Are bioptic telescopes allowed?	Not permitted to meet acuity standards; however, are permitted for driving. Must pass vision test with carrier lens only: 20/100.
Visual fields	Minimum field requirement	120° both eyes
	Visual field testing device	PENNDOT does not regulate the kind of testing devise used to measure this
Color vision requirement	No	
Type of road test	Standardized road test, same as those used for the first-time permit application drivers.	
Restricted licenses	Yes: daytime driving only, area restrictions, dual mirrors, class restriction—all vision related	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	Internet, mail, in-person
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	Drivers 65+ renew every 2 years instead of 4; all drivers 45+ requested to submit physical and vision exam prior to renewing (random mailing of 1,650 per month)	

Reporting Procedures

Mandatory medical reporting	Any person qualified to make a medical diagnosis is required to report any patient they feel exhibits unsafe driving behaviors.
Physician/medical reporting	Required, "All physicians and other persons authorized to diagnose or treat disorders and disabilities defined by the Medical Advisory Board shall report to PENNDOT in writing the full name, DOB, and address of every person 15 years of age and older, diagnosed as having any specified disorder or disability within 10 days."
Immunity	Yes—see 1518 (f)—"No civil or criminal action may be brought against any person or agency for providing the information required under this system."
Legal protection	Yes
DMV follow-up	PENNDOT then sends out appropriate correspondence to drivers asking them to have necessary forms completed and/or test performed.
Other reporting	Will accept information from court, other DMVs, police, emergency personnel, and family members/neighbors/caregivers, so long as reports are signed with a way to confirm reporter facts.
Anonymity	Yes

Pennsylvania (continued)

Medical Advisory Board

Role of the MAB	The board advises PENNDOT and reviews regulations proposed by PENNDOT concerning physical and mental criteria including vision standards relating to the licensing of drivers. It meets, typically, once every 2 years or as needed.
Medical Review contact information	Bureau of Driver Licensing Driver Qualifications Section PO Box 68682 Harrisburg, PA 17106-8682 717-787-9662

Rhode Island

Name of State & DMV contact information	Rhode Island Department of Motor Vehicles Division of Motor Vehicles Services 286 Main Street Pawtucket, RI 02860 *www.dmv.state.ri.us/*	401-588-3020

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 better eye.
	Are bioptic telescopes allowed?	Not mentioned in the regulations
Visual fields	Minimum field requirement	115° in horizontal meridian, for one eye 40° nasally
Color vision requirement	No	
Type of road test		
Restricted licenses	No	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	If license has been expired three years or more, it cannot be renewed
	Vision testing required at time of renewal?	Yes
	Written test required?	No, only if license has been expired 3 years or more
	Road test required?	No, only if license has been expired 3 years or more
Age-based renewal procedures	Age 75, renewal cycle reduced to 2 years.	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes, Any physician who diagnoses a physical or mental condition which in the physician's judgment will significantly impair the person's ability to safely operate a motor vehicle may voluntarily report the person's name and other information relevant to the condition to the Medical Advisory Board within the Registry of Motor Vehicles.
Immunity	Yes, Any physician reporting in good faith and exercising due care shall have immunity from any liability, civil or criminal, that otherwise might result by reason of his actions pursuant to the section. No cause of action may be brought against any physician for not making a report pursuant to this section.
Legal protection	
DMV follow-up	Driver is notified in writing of referral.
Other reporting	Will accept information from court, other DMVs, police, and family members.
Anonymity	

Medical Advisory Board

Role of the MAB	Action is based on the recommendation of the majority.
Medical Review contact information	Information related to medical review can be obtained by calling 401-588-3020

South Carolina

Name of State & DMV contact information	Department of Motor Vehicles PO Box 1498 Blythewood, SC 29016 *www.scdmvonline.org*	803-896-5000

Licensing Requirements

Visual acuity	Each eye without correction	20/40
	Both eyes without correction	20/40
	Each eye with correction	20/40
	Both eyes with correction	20/40
	If one eye blind—other without correction	20/40
	If one eye blind—other with correction	20/40—must have outside mirror
	Absolute visual acuity minimum	20/40 better eye unrestricted, 20/70 in better eye if worse eye is 20/200 or better; if not then 20/40.
	Are bioptic telescopes allowed?	Not permitted to meet acuity standard (must meet acuity standard through carrier lens); however, permitted to use while driving.
Visual fields	Minimum field requirement	No
	Visual field testing device	Not specified.
Color vision requirement	No	
Type of road test	Not specified.	
Restricted licenses	Yes: corrective lens, outside mirrors, daylight driving only	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Renewal by mail if no violations in past 2 years, no suspension, revocations or cancellations.
	Vision testing required at time of renewal?	Only if 5+ points on record
	Written test required?	Only if 5+ points on record
	Road test required?	Only if there appears to be a need.
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	No
Legal protection	N/A
DMV follow-up	License is suspended upon referral and further examination is conducted.
Other reporting	Will accept information from court, other DMVs, and police.
Anonymity	N/A

Medical Advisory Board

Role of the MAB	The Medical Advisory Board determines the mental of physical fitness of license applicants through a medical evaluation process, and makes recommendations to the department's director or designee on the handling of impaired drivers.
Medical Review contact information	South Carolina Driver Improvement Office PO Box 1498 Columbia, SC 29216 803-896-9925

South Dakota

Name of State & DMV contact information	South Dakota Driver Licensing 118 West Capitol Avenue Pierre, SD 57501 *www.state.sd.us/dps/dl*	800-952-3696 or 605-773-6883

Licensing Requirements

Visual acuity	Each eye with/without correction	N/A
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/60 both eyes with/without correction
	Are bioptic telescopes allowed?	Yes (skill test required)
Visual fields	Minimum field requirement	No
Color vision requirement	No	
Type of road test	Standardized course	
Restricted licenses	Yes: daylight only, outside rearview mirrors; corrective lenses, 50 mile radius from home, no driving outside of town	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	In person; renewal by mail for military and military dependents only.
	Vision testing required at time of renewal?	Yes
	Written test required?	No (unless expired more than 30 days)
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes, physicians may report unsafe drivers if they so choose. The form to be used is a request re-evaluation form. It can be found on our Web site or by calling our office.
Immunity	No
DMV follow-up	An appointment is scheduled and the driver is notified to appear for an interview, written and road test may be included.
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	No

Medical Advisory Board

Role of the MAB	Medical information is reviewed by Department of Public Safety personnel. Upon having good cause to believe that a licensed operator is not qualified to be licensed, may upon written notice of at least 5 days to the licensee, require him or her to submit to an examination or interview. The department shall take action as may be appropriate and may withdraw/cancel the license of such person or permit him or her to retain such license, or may issue a license subject to restrictions.
Medical Review contact information	Information on making referrals can be obtained through the contacts above.

Tennessee

Name of State & DMV contact information	Tennessee Department of Safety Driver License Division 1150 Foster Avenue Nashville, TN 37249-1000 *http://state.tn.us/safety/driverservices.shtml*	615-741-3954

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 better eye with/without correction, minimum 20/60 each/both eye with restrictions
	Are bioptic telescopes allowed?	Yes, for 20/200 better eye, 20/60 through scope; visual field 150° or larger, telescope no greater than 4X
Visual fields	Minimum field requirement	For professional drivers only
	Visual field testing device	Stereo Optic
Color vision requirement	Yes, commercial only	
Type of road test	Standardized, certain requirements in course.	
Restricted licenses	Yes: with area limitations	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Mail in every other cycle, by mail, in person and by Internet
	Vision testing required at time of renewal?	No
	Written test required?	No (except in case of hazardous material)
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	Yes
Legal protection	No
DMV follow-up	Driver is notified in writing of referral.
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	No

Medical Advisory Board

Role of the MAB	Paid physicians make recommendations upon review of medical report. Action is based upon recommendation of the majority.
Medical Review contact information	Driver Improvement Office can be reached at 615-251-5193 *http://state.tn.us/safety/forms/medical.pdf*

Texas

Name of State & DMV contact information	Texas Department of Public Safety Driver License Division PO Box 4087 Austin, TX 78773-0001 *www.txdps.state.tx.us/*	512-424-2600

Licensing Requirements

Visual acuity	Each/both eyes without correction	20/40
	Each/both eyes with correction	20/50
	If one eye blind—other without correction	20/50 with eye specialist statement
	If one eye blind—other with correction	20/50 with eye specialist statement
	Absolute visual acuity minimum	20/40 in better eye for unrestricted license; 20/70 in better eye with restrictions.
	Are bioptic telescopes allowed?	Yes, provided that the client has acuity of 20/40 through the telescope and passes road test.
Visual fields	Minimum field requirement	None
Color vision requirement	There is a requirement for all new drivers (not specified)	
Type of road test	Standardized Course	
Restricted licenses	Yes, restrictions applied per medical advisory direction (daytime only, speed limit <45 mph; no expressway driving) Restrictions are based on medical advice and may include daytime driving only where the speed limit <45 mph and no expressway driving.	

License Renewal Procedures

Standard	Length of license validation	6 years
	Renewal options and conditions	In person; every second renewal period may be eligible for alternate renewal by Internet, telephone, or mail.
	Vision testing required at time of renewal?	At in-person renewal
	Written test required?	May be required based upon evaluation of medical, physical, or mental impairments.
	Road test required?	May be required based upon evaluation of medical, physical, or mental impairments.
Age-based renewal procedures	No. Effective 9/1/2007, drivers 79 or older must renew in person; renewal is required every 2 years for drivers 85 or older.	

Reporting Procedures

Physician/medical reporting	Any physician licensed to practice medicine in Texas may inform the Department of Public Safety. This release of information is an exception to the patient-physician privilege. There is no special reporting form; a letter from the physician will suffice.
Immunity	Yes
DMV follow-up	The driver is notified in writing of the referral and required to provide medical information from his/her personal physician.
Legal Protection	Yes
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	Not anonymous or confidential. However, an attempt is made to protect the identity of the reporter. If the client requests an administrative hearing to contest enforcement action, the identity of the reporter may be revealed at that time.

Texas (continued)

Medical Advisory Board

Role of the MAB	The MAB advises the Department of Public Safety on medical issues regarding individual drivers. The Department bases its actions on the recommendation of the physician who reviews the case.
Medical Review contact information	Texas Department of Public Safety Medical Advisory Board PO Box 4087 Austin, TX 78773 512-424-7120

Utah

Name of State & DMV contact information	Utah Department of Public Safet Driver License Division PO Box 144501 Salt Lake City, UT 84114-4501 *www.driverlicense.utah.gov*	801-965-4437

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/100 in better eye with restrictions.
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	120° horizontal, 20° vertical, 90° with restrictions
	Visual field testing device	Stereo Optical (DMV2000)
Color vision requirement	No	
Type of road test	In applicant's own car, with examiner. Certain driving tasks required to complete.	
Restricted licenses	Yes: daytime only, speed limit <45 mph, radius limit.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Mail in every other cycle if no suspensions, revocations, convictions, and not more that 4 violations.
	Vision testing required at time of renewal?	Yes, for age 65+. All drivers are required to take the vision test when renewing in person. The age-based vision-testing requirement pertaining to those 65 and over applies only to the renewal by mail program.
	Written test required?	No
	Road test required?	No, unless examiner feels the applicant's ability to drive is in question
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Yes
Immunity	Yes, any physician or other person who becomes aware of a physical, mental or emotional impairment which appears to present an imminent threat to driving safety and reports this information to the Department of Public Safety, through its agents, in good faith shall have immunity from any damages claimed as a result of so doing.
Legal protection	No
DMV follow-up	Driver is notified in writing of referral. License is suspended upon referral
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	Not confidential

Utah (continued)

Medical Advisory Board

Role of the MAB	A Driver License Medical Advisory Board was created to advise the Director of the Driver License Division and to recommend written guidelines and standards for determining the physical, mental, and emotional capabilities appropriate to various types of driving in an effort to minimize the conflict between the individual's desire to drive and the community's desire for safety.
Medical Review contact information	Program Coordinator, Utah Driver License Division PO Box 144501 Salt Lake City, Utah 84114-4501 Phone: 801/965-3819 Fax: 801/965-4084 *http://publicsafety.utah.gov/dld/med_standards.html*

Vermont

Name of State & DMV contact information	Vermont Department of Motor Vehicles 120 State Street Montpelier, VT 05603 *www.dmv.state.vt.us/dmvhp.htm*	802-828-2000

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in better eye.
	Are bioptic telescopes allowed?	Yes, and must pass road test, daytime only under 10,000 lbs.
Visual fields	Minimum field requirement	Each eye 60° External binocular, 60° external and 60° nasal monocular
	Visual field testing device	Yes
Color vision requirement	No	
Type of road test	Standard	
Restricted licenses	Yes, for glasses or contact lenses	

License Renewal Procedures

Standard	Length of license validation	2 to 4 years
	Renewal options and conditions	Mail and in person
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Doctors may only provide information to the DMV with the permission of the patient
Immunity	No
Legal protection	No
DMV follow-up	Driver is notified of referral by mail.
Other reporting	Will accept information from court, other DMVs, police, concerned citizens, or family members, provided the complaint is signed.
Anonymity	Only up until a hearing is requested.

Medical Advisory Board

Role of the MAB	Vermont no longer has a Medical Advisory Board.

Virginia

Name of State & DMV contact information	Virginia Department of Motor Vehicles Attn: Medical Review Center PO Box 27412 Richmond, VA 23269-0001 *www.dmv.state.va.us/*	804-367-0531 or 804-367-6203

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 better eye, 20/70 daylight only, 20/200 better eye with restrictions.
	Are bioptic telescopes allowed?	Yes, with 20/200 through carrier, 20/70 through telescope—test required.
Visual fields	Minimum field requirement	100° monocular and binocular; 70° monocular and binocular—daylight only. 40 ° or better temporal and 30° or better nasal—vision in one eye only.
	Visual field testing device	Stereo Optical/Titmus 10mm W @333 mm.
Color vision requirement	No	
Type of road test	Behind-the-wheel test is administered with the DMV examiner instructing and evaluating the person on specific driving maneuvers.	
Restricted licenses	Yes. A person can obtain a restricted license with a variety of restrictions if authorized by Virginia law and granted by DMV (based on performance on road test, for medical reasons, or for violation of probation) or by the court (based on conviction). The restrictions range from corrective lenses, hand controls, and 5-mile radius of residence, to daylight driving only, ignition interlock device, and to and from work/school.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	Customers may use alternative method of renewing driver's license applications every other cycle unless suspended or revoked, 2+ violations, DMV medical review indicator on license, failed vision test. Alternative methods include mail-in, Internet, touch-tone telephone, fax, and ExtraTeller.
	Vision testing required at time of renewal?	Yes
	Written test required?	Only if 2+ violations in 5 years
	Road test required?	No
Age-based renewal procedures	No	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are not required to report unsafe drivers. However, for physicians who do report unsafe drivers, laws have been enacted to prohibit release of the physician's name as the source of the report.
Immunity	No
Legal protection	
DMV follow-up	

Virginia (continued)

Other reporting	DMV relies upon information from courts, other DMVs, law enforcement officers, physicians and other medical professionals, relatives and concerned citizens to help identify drivers who may be impaired.
Anonymity	Virginia law provides confidentiality, only for relatives and physicians.

Medical Advisory Board

Role of the MAB	The board enables the Department of Motor Vehicles (DMV) to comply with its responsibilities of monitoring drivers throughout the State who may have physical or mental problems. The board assists the commissioner through the development of medical and health standards for use in the issuance of driver's licenses. The board helps the department avoid the issuance of licenses to persons suffering from any physical or mental disability or disease that will prevent their exercising reasonable and ordinary control over a motor vehicle while driving it on the highways. They review the more complex cases and cases referred for administrative hearings and provide recommendations for medical review action.
Medical Review contact information	Questions about medical review can be directed to 804-497-7188 *www.dmv.state.va.us/webdoc/citizen/medical/index.asp*

Washington

Name of State & DMV contact information	Washington Department of Licensing Driver Services PO Box 9030 Olympia, WA 98507-9030 *www.dol.wa.gov/*	360-902-3900

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40
	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/40 in better eye; 20/70 in better eye with restriction. Person must have vision better than 20/200. 20/50 or worse with both eyes person must take standard drive test.
	Are bioptic telescopes allowed?	Yes: training and test required. Training is not required but encouraged.
Visual fields	Minimum field requirement	110° in horizontal meridian for binocular and monocular.
	Visual field testing device	OPTEC 1000; Keystone Telebinocular; Keystone DVSII
Color vision requirement	Yes, for new and professional drivers.	
Type of road test	Standardized scoring using approved test routes at each licensing office.	
Restricted licenses	Yes, depending on circumstances. Corrective lenses to meet minimum acuity; daytime driving only based on eye care practitioner's report, or after failed night time driving test; also if needed to compensate for visual or physical impairment-equipment restrictions, route, distance, or geographic area limits depending on outcome of testing driver's ability. We no longer give night drives or have route, distance, or geographic area limits. We do still have equipment restrictions.	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	In-State renewal—in person only. Out of State, can renew by mail once.
	Vision testing required at time of renewal?	Yes, both eyes together only. Full eye test anytime we issue a new license.
	Written test required?	Waived unless warranted by vision, health or medical screening.
	Road test required?	Waived unless warranted by vision, health or medical screening.
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	No
Legal protection	No
DMV follow-up	Letter to the driver with information detailing due process and action following any failure to respond.
Other reporting	Will accept information from court, other DMVs, police, family members, and other competent sources. If in doubt, the reporting party may be required to establish firsthand knowledge and standing for making a report.

Washington (continued)

Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	Washington does not have an MAB.
Medical Review contact information	Information on referrals can be found at *www.dol.wa.gov/driverslicense/reportunsafe.html* or by writing to Driver Records Department of Licensing PO Box 9030 Olympia, WA 98507-9030

West Virginia

Name of State & DMV contact information	West Virginia Department of Transportation Division of Motor Vehicles Building 3, Room 1240 1800 Kanawha Boulevard East Charleston, WV 25317 www.wvdmv.gov	800-642-9066 or 304-558-3900

Licensing Requirements

Visual acuity	Both eyes with/without correction	20/40
	If one eye blind—other with/without correction	20/40
	Absolute visual acuity minimum	20/60 better eye; if less then optometrist or ophthalmologist must declare ability to be safe.
	Are bioptic telescopes allowed?	No
Visual fields	Minimum field requirement	None
	Visual field testing device	No
Color vision requirement	No	
Type of road test	Standard Road Skills Exam	
Restricted licenses	None	

License Renewal Procedures

Standard	Length of license validation	5 years
	Renewal options and conditions	5 years, no examinations required
	Vision testing required at time of renewal?	No
	Written test required?	No
	Road test required?	No
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	Physicians are encouraged to report and may do so.
Immunity	No
Legal protection	No
DMV follow-up	A medical report is sent to the driver, to be completed by his/her physician. Failure to comply—the drivers license is revoked.
Anonymity	Not confidential

Medical Advisory Board

Role of the MAB	To review medical cases and advise the Division on the condition of the driver and how their condition might affect their ability to drive. If the MAB comes to the conclusion that the driver is unsafe they make a recommendation to the Commissioner of Motor Vehicles and it is the Commissioner that has the final say as to revoke the driver.
Medical Review contact information	Questions about medical review can go to 304-558-0238

Wisconsin

Name of State & DMV contact information	Wisconsin Driver Services, Medical Division Medical Review Section PO Box 7918 Madison, WI 53707 *www.dot.wisconsin.gov/drivers/index.htm*	608-266-2327

Licensing Requirements

Visual acuity	Each eye with/without correction	20/40 to 20/100 in better eye
	Both eyes with/without correction	Not acceptable
	If one eye blind—other with/without correction	20/40 to 20/100 in better eye
	Absolute visual acuity minimum	20/100 in better eye with or without correction
	Are bioptic telescopes allowed?	Not to meet vision standards but can use to drive
Visual fields	Minimum field requirement	20° better eye for regular license
	Visual field testing device	Stereo optical machines
Color vision requirement	Yes	
Type of road test	Knowledge and sign test, prior to road test. Limited area test is non-fixed, otherwise standardized.	
Restricted licenses	Yes, restrictions can be recommended by physician, vision specialist or determined by road test (day-time driving only, mileage radius, road posted and/or freeway restriction).	

License Renewal Procedures

Standard	Length of license validation	8 years
	Renewal options and conditions	In person
	Vision testing required at time of renewal?	By mail if person is out of State
	Written test required?	Yes Determined by DOT, vision specialist, or physician.
	Road test required?	Determined by DOT, vision specialist, or physician
Age-based renewal procedures	None	

Reporting Procedures

Mandatory medical reporting	None
Physician/medical reporting	Physicians are not required but encouraged to report. They can report by submitting form MV3141 Driver Condition or Behavior Report or by letter on stationary letterhead.
Immunity	Yes
Legal protection	Yes
DMV follow-up	Driver is notified in writing requirements and depending on requirements given 15, 30, or 60 days to comply. If do not comply within the time period given, driver's license is cancelled. They are notified in writing of cancellation
Other reporting	Will accept information from court, other DMVs, police, family members, and other resources.
Anonymity	WI has open records law; however, individuals can submit acceptable pledge of confidentiality form MV3454

Wisconsin (continued)

Medical Advisory Board

Role of the MAB	Action is taken based on recommendation of the majority, the individuals driver record, medical information provided from physician and, if appropriate, driving examination results. Wisconsin has 2 types of Medical Review Boards: 1. By-mailboard: paper file is mailed to 3 physicians (specialists, i.e., neurologists, endocrinologists) for recommendation, based on medical condition. 2. In-person board: interview with 3 physicians (psychiatrist, neurologist, and internal medicine). The final step in the review process is judicial review which goes through a court process.
Medical Review contact information	Information about the medical review program can be obtained through the following: E-mail: *dre.dmv@dot.state.wi.us* Phone: 608-266-2327 FAX: 608-267-0518 *www.dot.wisconsin.gov/drivers/drivers/aging/impaired.htm*

Wyoming

Name of State & DMV contact information	Wyoming Dept. of Transportation Driver Services Program 5300 Bishop Blvd Cheyenne, WY 82009-3340 *http://dot.state.wy.us*	307-777-4871

Licensing Requirements: Must meet minimum of 20/100 with both eyes, with or without correction.

Visual acuity	Each eye with/without correction	None
	Both eyes with/without correction	Minimum of 20/100
	If one eye blind—other with/without correction	Minimum of 20/100 with both eyes
	Absolute visual acuity minimum	20/100
	Are bioptic telescopes allowed?	Yes, but the person must meet the minimum visual acuity & visual field levels with the lenses–generally restricted to "no interstate driving", as well as restrictions to speed and area.
Visual fields	Minimum field requirement	120°
	Visual field testing device	Keystone Machine
Color vision requirement	N/A	
Type of road test	Driving skills test with an examiner.	
Restricted licenses	B = glasses required, F = left & right outside rearview mirrors required G = Daylight driving only, I = limited other (such as distance, speed, etc.)	

License Renewal Procedures

Standard	Length of license validation	4 years
	Renewal options and conditions	Vision screening required for each renewal.
	Vision testing required at time of renewal?	Yes
	Written test required?	No
	Road test required?	No—dependent upon vision specialist recommendation and/or decrease in visual acuity level (i.e., 20/50 or worse visual acuity)
Age-based renewal procedures	Are there any age-based license renewal procedures?	No

Reporting Procedures

Mandatory medical reporting	No
Physician/medical reporting	No
Immunity	No
Legal protection	No
DMV follow-up	Re-examinations are performed upon request from family, medical specialists, law enforcement agencies, and examiner observation.
Other reporting	Law enforcement, family member, medical specialist, vision specialist, etc.
Anonymity	N/A

Medical Advisory Board

Role of the MAB	Wyoming does not have a Medical Advisory Board.
Medical Review contact information	Requests for review must be made in writing to: Driver Services - Medical Review 5300 Bishop Blvd. Cheyenne, WY 82009

Resources

Coley, M. J., Coughlin, J. F. (2001, Summer). State Driving Regulations. Adapted from National Academy on an Aging Society. The Public Policy and Aging Report, Volume 11, Number 4. Washington, DC: The Gerontological Society of America.

Epilepsy Foundation. Driver information by State. *www.epilepsyfoundation.org/living/wellness/transportation/drivinglaws.cfm*. Accessed November 21, 2007.

Insurance Institute for Highway Safety. (2007). U.S. driver licensing procedures for older drivers. *www.iihs.org/laws/olderdrivers.aspx*. Accessed November 31, 2007.

Insurance Information Institute. (2007). Older Drivers. New York. *www.iii.org/media/hottopics/insurance/olderdrivers/?printerfriendly=yes*. Accessed November 21, 2007.

NHTSA. (2003). Older Drivers: State Reporting Practices. DOT HS 809 301, 2003. Washington, DC: National Highway Traffic and Safety Administration *www.nhtsa.dot.gov/people/injury/olddrive/FamilynFriends/state.htm*. Accessed November 21, 2007.

Staplin, L. (2003). Model Driver Screening and Evaluation Program: Guidelines for Motor Vehicle Administrators. Washington, DC: National Highway Traffic and Safety Administration *www.nhtsa.com/people/injury/olddrive/modeldriver/guidelines.htm#Table%20of%20Contents*. Accessed November 22, 2007.

CHAPTER 9

Medical Conditions and Medications That May Affect Driving

CHAPTER 9

Medical Conditions and Medications That May Affect Driving

This chapter contains a reference table of medical conditions and medications that may affect driving skills, with consensus recommendations for each. Whenever scientific evidence supports the recommendations, it is included. These recommendations apply only to *drivers of private motor vehicles*, and should not be applied to commercial drivers. Although many of the listed medical conditions are more prevalent in the older population, these recommendations apply to all drivers with medical impairments, regardless of age.

The medical conditions were chosen for their relevance to clinical practice and/or because there is some evidenced-based literature indicating a correlation with driving impairment. The interested clinician is referred to two recent reviews that comprehensively covered many of these conditions.[187] [188] In addition, several other countries have published guidelines, including Canada,[189] Australia,[190] the United Kingdom,[191] and New Zealand.[192]

Although the corresponding recommendations are based on scientific evidence whenever possible, please note that use of these recommendations has not yet been proven to reduce crash risk,[193] except for a few medical conditions (e.g., treating obstructive sleep apnea, performing cataract surgery, and discontinuing a benzodiazepine). As such, these recommendations are provided to physicians as a tool to guide the decision-making process. They are not intended to substitute for the physician's clinical judgment.

How to use this chapter

Physicians may consult this chapter if they have questions on specific medical conditions and their effect on driving. If a patient presents with a particular medical condition and/or related functional deficits (e.g., deficits in vision, cognition, or motor function) that may affect his/her driving safety, the physician may base interventions for driving safety on this chapter's guidelines. We make the following recommendations:

- Treat the underlying medical condition to correct functional deficits and prevent further functional decline.
- If the functional deficit is due to an offending agent (e.g., medication with impairing side effects), remove the offending agent or reduce the dose, if possible.
- Advise the patient about the risks to his/her driving safety, and recommend driving restrictions or driving cessation as needed.
- For acute or episodic illnesses (e.g., seizure disorder and/or diabetics with hypoglycemia), clinical judgment and subspecialist input is recommended, in addition to following specific State statutes.

If further evaluation is required or the functional deficits are not medically correctable, refer the patient to a driver rehabilitation specialist for a driving evaluation (including an on-road assessment) for a chronic condition whenever possible. The driver rehabilitation specialist may prescribe adaptive techniques and devices to compensate for these deficits, and train the patient in their use. (See Chapter 5 for a further discussion of driver rehabilitation services.)

Physicians should advise patients against driving if they report symptoms

187. Charlton, J., Koppel, S., O'Hare, M., et al. (2004). Influence of Chronic Illness on Crash Involvement of Motor Vehicle Drivers. Monash University. Accident Research Centre. Report #213. Supported by Swedish National Road Administration. Melbourna, Australia: Monash University.

188. Dobbs, B. M. (2002). Medical Conditions and Driving: Current Knowledge, Final Report Association for the Advancement of Automotive Medicine. NHTSA Publication DOT HS 809 690. Washington, DC: National Highway Traffic Safety Administration. *www.nhtsa.dot.gov/people/injury/research/Medical_Condition_Driving/pages/TRD.html.*

189. Canadian Medical Association. Determining Medical Fitness to Drive: *A Guide for Physicians*, 6th ed. Ottawa; 2000.

190. Austroads. Assessing Fitness to Drive for Commercial and Private Vehicle Drivers. Medical Standards for Licensing and Clinical Management Guidelines. *A Resource for Health Professionals in Australia*; 2003.

191. Driver Medical Group DVLA Swansea for Medical Practitioners. *At a Glance Guide to the Current Medical Standards of Fitness to Drive*. (2003). Swansea, UK.

192. Land Transport Safety Authority. (2002). *Medical Aspect of Fitness to Drive*. Wellington, New Zealand.

193. Although scientific evidence links certain medical conditions and levels of functional impairment with crash risk, more research is needed to establish that driving restrictions based on these medical conditions and levels of functional impairment significantly reduce crash risk.

that are irreversible and incompatible with safe driving (e.g., visual changes, syncope or pre-syncope, vertigo, severe pain, etc.). If despite extensive medical work-up these symptoms continue, such patients should be strongly urged to seek alternate forms of transportation, including taxis, rides from family and friends, and medical transportation services.

In the inpatient and emergency department, driving should be routinely addressed prior to the patient's discharge whenever appropriate, especially when prescribing new sedating medications. Even for the patient whose symptom or treatment clearly precludes driving, it should not be assumed that the patient is aware that he/she should not drive. The physician should counsel the patient regarding driving, and discuss a future plan (e.g., resumption of driving upon resolution of symptoms, driver rehabilitation upon stabilization of symptoms, and so forth.).

Keep in mind that an individual's driving purposes (e.g., responsible for taking grandchildren to day care) and/or need to drive for a vocation (e.g., salesperson who has increased exposure or miles driven per year) may influence the extent of the interventions or advice in regard to an evaluation. For example, more restriction or a performance-based road test may be more aggressively pursued for a patient who frequently drives long distances over unfamiliar roads in comparison to a patient who drives short, familiar routes.

Medical conditions and medications that may affect driving

Table of contents

Section 1: Vision and hearing loss

Vision is the primary sense employed in driving when compared to hearing and proprioception, and is responsible for 95 percent of driving-related sensory inputs.[194] Age- and disease-related changes of the eye and brain may affect visual acuity, visual fields, night vision, contrast sensitivity, and other aspects of vision. External obstruction of view (e.g., blepharoptosis) should not be overlooked, as it may significantly limit visual fields. The literature that is available on eye disease suggests that driving impairment is likely mediated by impairment in contrast sensitivity,[195] visual fields,[196] or visual processing speed.

Whenever possible, vision deficits should be managed and corrected. Recent data suggest that intervention with current treatments for common eye diseases such as age-related macular degeneration,[197] glaucoma,[198] and cataracts[199] have the potential to improve or stabilize the condition, and in some cases these interventions have been noted to reduce crash risk.[200] Patients with persistent vision deficits may reduce their impact on driving safety by restricting travel to low-risk areas and conditions, such as familiar surround-

194. Shinar, D., & Schieber, F. (1991). Visual requirements for safety and mobility of older drivers. Hum Factors. 33(5):507–519.

195. Mabtyjari, M., & Tuppurainen, K. (1999). Cataract in traffic. *Graefes Arch Clin Exp Ophthalmal.* 237:278–282.

196. Szlyk, J. P., Mahler, C. L., Seiple, W., et al. (2005). Driving performance of glaucoma patients correlates with peripheral visual field loss. *J Glaucoma.* 14:145–150.

197. Smith, B.T., Joseph, D.P., & Grand, M.G.(2007). Treatment of neovascular age-related macular degeneration: past, present, and future directions. *Curr Opin Ophthalmol.* 18:240–244.

198. Leske, M.C., Hejl, A., Hussein, M., et al. (2003). Factors for glaucoma progression and the effect of treatment: the Early Manifest Glaucoma Trial. *Arch Ophthamol.* 121:48–56.

199. Van Den Berg, T., Van Rijn, L.J., Rene, M., Michael, R., Heine, C., et al. (2007). Straylight effects with aging and lens extraction. *Am J Ophthalmol.* 144(3):358–363.

200. Owsley, C., McGwin, G. Jr., Sloane, M., et al. (2002). Impact of cataract surgery on motor vehicle crash involvement by older adults. *JAMA.* 288:841–849.

ings, low speed areas, non-rush hour traffic, daytime, and good weather conditions. This has been noted for certain eye diseases, especially glaucoma.[201]

201. Adler, G., Bauer, M. J., Rottunda, S., et al. (2005). Driving habits and patterns in older men with glaucoma. *Social Work Health Care*. 40(3):75–87.

Sensory Deprivation

1. Visual acuity
   a. Cataracts
   b. Retinopathy (diabetic or hypertensive)
   c. Keratoconus
   d. Macular degeneration
   e. Nystagmus
   f. Telescopic lens
2. Visual field
   a. Glaucoma
   b. Hemianopia/quadrantanopia
   c. Monocular vision
   d. Ptosis or upper lid redundancy
   e. Retinitis pigmentosa
3. Contrast sensitivity
4. Defective color vision
5. Poor night vision and glare recovery
6. Diplopia
7. Hearing loss

Section 1: Sensory deprivation

Visual acuity

Please note that the recommendations stated below are subject to your particular State's licensing requirements. (See Chapter 8 for a State-by-State reference list of licensing requirements.) Many States require far visual acuity of 20/40 for licensure; however, recent studies indicate that there may be no basis for this requirement.3 State driver licensing agencies are urged to base their visual acuity requirements on the most current data, as appropriate. However, referral to an ophthalmologist is recommended since common causes for visual impairment (cataracts, macular degeneration, glaucoma) can improve and/or stabilize with treatment.

Visual acuity may be measured with both eyes open or with the best eye open, as the patient prefers. The patient should wear any corrective lenses usually worn for driving.

Patients with decreased far visual acuity may lessen its impact on driving safety by restricting driving to low-risk areas and conditions (e.g., familiar surroundings, non-rush hour traffic, low speed areas, daytime, and good weather conditions).

For best-corrected far visual acuity less than 20/70, the physician should recommend an on-road assessment performed by a driver rehabilitation specialist (where it is permitted and available) to evaluate the patient's performance in the actual driving task.

For best-corrected far visual acuity less than 20/100, the physician should recommend that the patient not drive unless safe driving ability can be demonstrated in an on-road assessment, where permitted and available. (See also Telescopic lens in this section.)

Cataracts

No restrictions if standards for visual acuity and visual fields are met, either with or without cataract removal.

Patients who require increased illumination or who experience difficulty with glare recovery should avoid driving at night and under low-light conditions, such as adverse weather conditions.

Diabetic or hypertensive retinopathy

No restrictions if standards for visual acuity and visual fields are met.
It is recommended that diabetic patients have annual eye examinations.

Keratoconus	Patients with severe keratoconus correctable with hard contact lenses should drive only when the lenses are in place. If lenses cannot be tolerated, patients with severe keratoconus should not drive even if they meet standards for visual acuity, as their acuity dramatically declines outside their foveal vision, rendering their peripheral vision useless.
Macular degeneration	No restrictions if standards for visual acuity and visual fields are met. Patients who experience difficulty with glare recovery should avoid driving at night. Patients with the neovascular "wet" form of the disease may require frequent assessment due to the rapid progression of the disease.
Nystagmus	No restrictions if standards for visual acuity and visual fields are met.
Telescopic lens	A bioptic telescope is an optical telescope mounted on the lens of eyeglasses. During normal use, the wearer can view the environment through the regular lens. When extra magnification is needed, a slight downward tilt of the head brings the object of interest into the view of the telescope.[202] The specialist who prescribes a telescopic lens should ensure that the patient is properly trained in its use. It has not been established whether telescopes enhance the safety of low-vision drivers. As stated in the American Academy of Ophthalmology's Policy Statement, Vision Requirements for Driving (approved by Board of Trustees, October 2001): "More than half the States allow drivers to use bioptic telescopes mounted on glasses, through which they spot traffic lights and highway signs. It has not yet been demonstrated whether the estimated 2,500 bioptic drivers in the United States drive more safely with their telescopes than they would without them. The ability to drive safely using bioptic telescopes should be demonstrated in a road test in all cases." Please note that the statement above is subject to your particular State's licensing requirements. A road test should be administered only in those States that permit the use of bioptic telescopes in driving.
Visual field	While it is acknowledged that an adequate visual field is important for safe driving, there is no conclusive evidence to define what is meant by "adequate" nor any consistent standard as to how visual fields are tested. Visual field requirements vary between States, with many States requiring a visual field of 100 degrees or more along the horizontal plane, and other States having a lesser requirement or none at all.[203] (See Chapter 8 for a State-by-State reference list of visual field requirements.) If the primary care physician has any reason to suspect a visual field defect (e.g., through patient report, medical history, or confrontation testing), he/she should refer the patient to an ophthalmologist or optometrist for further evaluation. The primary care physician and specialist should be aware of their particular State's visual field requirements, if any, and adhere to them.

202. Peli, E., & Peli, D. (2002). *Driving With Confidence: A Practical Guide to Driving with Low Vision*. Singapore: World Scientific Publishing Co. Pte. Ltd.; p.100–101.

203. Peli, E., & Peli, D. (2002). *Driving With Confidence: A Practical Guide to Driving with Low Vision*. Singapore: World Scientific Publishing Co. Pte. Ltd.; p.20–22.

Visual field (continued)	For binocular visual field at or near the State minimum requirement or of questionable adequacy (as deemed by clinical judgment), a driver evaluation (including on-road assessment) performed by a driver rehabilitation specialist is strongly recommended. Through driving rehabilitation, the patient may learn how to compensate for decreased visual fields, although not hemi-neglect. In addition, the driver rehabilitation specialist may prescribe enlarged side and rear view mirrors as needed and train the patient in their use.
Glaucoma	No restrictions if standards for visual acuity and visual fields are met. Continued follow-up with an ophthalmologist and monitoring of visual fields and intraocular pressure are recommended.
Hemianopia/Quadrantanopia	The physician may choose to refer the patient to a driver rehabilitation specialist for assessment and rehabilitation. With or without rehabilitation, the patient should drive only if he/she demonstrates safe driving ability in an on-road assessment performed by a driver rehabilitation specialist. Please note that the recommendations stated above are subject to your particular State's licensing restrictions, if any, for hemianopia and quadrantanopia.
Monocular vision	Patients with acquired monocularity may need time to adjust to the lack of depth perception and reduction in total visual field. This period of adjustment varies among individuals, but it is reasonable to recommend temporary driving cessation for several weeks. Following this period, there are no restrictions if standards for visual acuity and visual fields are met. Upon resumption of driving, patients should be advised to assess their comfort level by driving in familiar, traffic-free areas before advancing to heavy traffic. Again, use of larger mirrors and evaluation and training by a driver rehabilitation specialist is encouraged.
Ptosis or lid redundancy, blepharospasm	Individuals with fixed ptosis or lid redundancy may drive without restrictions if their eyelids do not obscure the visual axis of either eye, and they are able to meet standards for visual acuity and visual fields without holding their head in an extreme position. Blepharospasms should be controlled so there is no interference with vision.
Retinitis pigmentosa	No restrictions if standards for visual acuity and visual fields are met. Patients who require increased illumination or who experience difficulty adapting to changes in light should not drive at night or under low-light conditions, such as during storms.

Contrast sensitivity

Contrast sensitivity is a measure of an individual's ability to perceive visual stimuli that differ in contrast and spatial frequency. Contrast sensitivity tends to decline with age; accordingly, deficits in contrast sensitivity are much greater in older individuals compared to their younger counterparts.[204]

Among older drivers, binocular measures of contrast sensitivity have been found to be a valid predictor of crash risk in patients with cataracts.[205] However, there are presently no standardized cut-off points for contrast sensitivity and safe driving, and it is not routinely measured in eye examinations.

Defective color vision

No restrictions if standards for visual acuity and visual fields are met.

Deficits in color vision are common (especially in the male population) and usually mild.

There appears to be no correlation between defective color vision and crash rates.[206] Only 19 States require prospective drivers to undergo color vision screening, and most of these States require screening for commercial drivers only.[207]

Despite reported difficulties with color vision discrimination while driving (difficulty distinguishing the color of traffic signals, confusing traffic lights with street lights, and difficulty detecting brake lights), it is unlikely that color vision impairments represent a significant driving hazard.[208]With the standardization of traffic signal positions, color blind individuals are able to interpret traffic signals correctly because they can identify the traffic signal by its position. Physicians may wish to advise patients that the order of signals in the less commonly used horizontal placement is (from left to right) red, yellow, green.

Poor night vision

If the patient reports poor visibility at night, the physician should recommend optometric and/or ophthalmologic evaluation. If the evaluation does not reveal a treatable cause for poor night vision, the physician should recommend that the patient not drive at night or under other low-light conditions, such as during storms or at dusk.

Diplopia

Patients with double vision in the central aspect of vision (20 degrees above and below, left and right of fixation) should not drive. Patients with uncorrected diplopia should be referred to an ophthalmologist or optometrist for further assessment to determine if the defect can be corrected with prisms or a patch and meet standards for driving. There should be a three-month adjustment period, after which specialists can determine if adequate adjustment has occurred.[209]

204. Dobbs, B. M. (2002, February). *Medical Conditions and Driving: Current Knowledge*, p. 15. DTNH22-94-G-05297. Submitted to the Association for the Advancement of Automotive Medicine under contract with the Washington, DC: National Highway Traffic Safety Administration.

205. Owsley, C., Stalvey, B. T., Wells, J., et al. (2001). Visual risk factors for crash involvement in older drivers with cataract. *Arch Opthalmol*. 119: 881–887.

206. Policy Statement. American Association of Ophthalmology, 2006. *www.aao.org/about/policy/upload/AAODrivingPolicyWebcopy.pdf*. Accessed December 12, 2007.

207. Peli, E., & Peli, D. (2002). *Driving With Confidence: A Practical Guide to Driving with Low Vision*. Singapore: World Scientific Publishing Co. Pte. Ltd.; p.25.

208. Dobbs, B. M. (2002, February). *Medical Conditions and Driving: Current Knowledge*. DTNH22-94-G-05297. Submitted to the Association for the Advancement of Automotive Medicine under contract with NHTSA, p. 15. Washington, DC: National Highway Traffic Safety Administration.

209. Canadian Ophthalmological Society. Vision Standards for Driving in Canada, 2000. *http://eyesite.ca/english/program-and-services/policy-Statements-guidelines/drivingstd.html*. Accessed December 12, 2007.

Hearing loss

No restrictions.

Relatively few studies have examined the relationship between hearing impairment and risk of motor vehicle crash. Of these, none have shown a significant relationship between hearing impairment and risk of crash.[210]

210. Dobbs, B. M. (2002, February). Medical Conditions and Driving: Current Knowledge. DTNH22-94-G-05297. Submitted to the Association for the Advancement of Automotive Medicine under contract with NHTSA, p. 37-38. Washington, DC: National Highway Traffic Safety Administration.

Section 2: Cardiovascular diseases

1. Unstable coronary syndrome (unstable angina or myocardial infarction)
2. Cardiac conditions that may cause a sudden, unpredictable loss of consciousness
   a. Atrial flutter/fibrillation with bradycardia or rapid ventricular response
   b. Paroxysmal supraventricular tachycardia (PSVT), including Wolf-Parkinson-White (WPW) syndrome
   c. Prolonged, nonsustained ventricular tachycardia (VT)
   d. Sustained ventricular tachycardia
   e. Cardiac arrest
   f. High grade atrio-ventricular (AV) block
   g. Sick sinus syndrome/sinus bradycardia/sinus exit block/sinus arrest
3. Cardiac disease resulting from structural or functional abnormalities
   a. Congestive heart failure (CHF) with low output syndrome
   b. Hypertrophic obstructive cardiomyopathy
   c. Valvular disease (especially aortic stenosis)
4. Time-limited restrictions: cardiac procedures
   a. Percutaneous transluminal coronary angioplasty (PTCA)
   b. Pacemaker insertion or revision
   c. Cardiac surgery involving median sternotomy
   d. Coronary artery bypass graft (CABG)
   e. Valve repair or replacement
   f. Heart transplant
5. Internal cardioverter defibrillator (ICD)

Although the data are still unclear in regard to a definitive relationship between crash risk and cardiovascular diseases, a recent study did note a modest increase in total crash risk and at-fault risk for older adults with cardiac disease.[211] For the patient with known cardiac disease, the physician should strongly and repeatedly caution him/her to seek help immediately upon experiencing any symptoms—including prolonged chest discomfort, acute shortness of breath, syncope, pre-syncope, palpitations, lightheadedness—that may indicate an unstable cardiac situation. Under no circumstances should the patient drive to seek help.

While hypertension is not included in this section, physicians should always be alert to any potential impairment in driving skills resulting from hypertensive end-organ damage or antihypertensive medications.

211. McGwin, G., Sims, R. V., Pulley, L., & Roseman, J. M. (2000). Relations among chronic medical conditions, medications, and automobile crashes in the elderly: a population-based case-control study. *Am J Epidemiol.* 152,424–431.

Unstable coronary syndrome (unstable angina or myocardial infarction)	Patients should not drive if they experience symptoms at rest or at the wheel. Patients may resume driving when they have been stable and asymptomatic for one to four weeks, as determined by the cardiologist, following treatment of the underlying coronary disease. Driving may usually resume within one week after successful revascularization by percutaneous transluminal coronary angioplasty (PTCA) and by four weeks after coronary artery bypass grafting (CABG).[212] (See also recommendations for CABG below [4.c in this section].)
Cardiac conditions that may cause a sudden, unpredictable loss of consciousness	A main consideration in determining medical fitness to drive for patients with cardiac conditions is the risk of pre-syncope or syncope due to a brady- or tachyarrhythmia.[213] For the patient with a known arrhythmia, the physician should identify and treat the underlying cause of arrhythmia, if possible, and recommend temporary driving cessation until control of symptoms has been achieved.
Atrial flutter/fibrillation with bradycardia or rapid ventricular response	No further restrictions once control of heart rate and symptoms have been achieved.
Paroxysmal supraventricular tachycardia (PSVT), including Wolf-Parkinson-White (WPW) syndrome	No restrictions if the patient is asymptomatic during documented episodes. Patients with a history of symptomatic tachycardia may resume driving after they have been asymptomatic for six months on antiarrhythmic therapy. Patients who undergo radio frequency ablation may resume driving after six months if there is no recurrence of symptoms, or sooner if no pre-excitation or arrhythmias are induced at repeat electrophysiologic testing.
Prolonged, nonsustained ventricular tachycardia (VT)	No restrictions if the patient is asymptomatic during documented episodes. Patients with symptomatic VT may resume driving after three months if they are on antiarrhythmic therapy (with or without an ICD) guided by invasive electrophysiologic (EP) testing, and VT is noninducible at repeat EP testing. They may resume driving after six months without arrhythmia events if they are on empiric antiarrhythmic therapy (with or without an ICD), or have an ICD alone without additional antiarrhythmic therapy.[214]
Sustained ventricular tachycardia (VT)	Patients may resume driving after three months if they are on antiarrhythmic therapy (with or without an ICD) guided by invasive electrophysiologic (EP) testing, and VT is noninducible at repeat EP testing. Patients may resume driving after six months without arrhythmia events if they are on empiric antiarrhythmic therapy (with or without an ICD), or have an ICD alone without additional antiarrhythmic therapy.[215]

212. Petch, M. C. (1998). European Society of Cardiology Task Force Report: Driving and Heart Disease. *Eur Heart J*. 19(8):1165–1177.

213. Binns, H., & Camm, J. (2002). Driving and arrhythmias. *Br Med J*. 324:927–928.

214. Epstein, A. I., Miles, W. M., Benditt, D. G., et al. (1996). Personal and public safety issues related to arrhythmias that may affect consciousness: implications for regulation and physician recommendations. *Circulation*. 94:1147–1166.

215. Ibid.

Sustained ventricular tachycardia (VT) (Continued)	When long-distance or sustained high-speed travel is anticipated, patients should be encouraged to have an adult companion perform the driving. Patients should avoid the use of cruise-control.[216]
Cardiac arrest	Please refer to the recommendations for sustained ventricular tachycardia. If the patient experiences a seizure, please refer to the recommendations for seizure disorder in Section 4, Neurological Diseases. If clinically significant cognitive changes persist following the patient's physical recovery, cognitive testing is recommended before the patient is permitted to resume driving. In addition, on-road testing performed by a driver rehabilitation specialist may be useful in assessing the patient's fitness to drive.
High grade atrio-ventricular (AV) block	For symptomatic block managed with pacemaker implantation, please see pacemaker recommendations in this section. For symptomatic block corrected without a pacemaker (e.g., by withdrawal of medications that caused the block), the patient may resume driving after he/she has been asymptomatic for four weeks and EKG documentation shows resolution of the block.
Sick sinus syndrome/sinus bradycardia/ sinus exit block/ sinus arrest	No restrictions if patient is asymptomatic. Regular medical follow-up is recommended to monitor progression. For symptomatic disease managed with pacemaker implantation, please see pacemaker recommendations in this section. Physicians should be alert to possible cognitive deficits due to chronic cerebral ischemia. Physicians may refer patients with clinically significant cognitive changes to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) to evaluate the patient's driving safety.
Cardiac disease resulting from structural or functional abnormalities	A main consideration in determining medical fitness to drive for patients with abnormalities of cardiac structure or function is the risk of pre-syncope or syncope due to low cardiac output, and of cognitive deficits due to chronic cerebral ischemia. Patients who experience pre-syncope, syncope, extreme fatigue, or dyspnea at rest or at the wheel should cease driving. Cognitive testing is recommended for those patients with a history of cognitive impairment that may impair the patient's driving ability. Physicians may refer patients with clinically significant cognitive changes to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) to evaluate the patient's driving safety.

216. Ibid.

Congestive heart failure (CHF) with low output syndrome	Patients should not drive if they experience symptoms at rest or while operating a motor vehicle. Physicians should reassess patients for driving fitness every six months to two years as needed, depending on clinical course and control of symptoms. Patients with functional class III CHF (marked limitation of activity but no symptoms at rest, working capacity 2 to 4 METS) should be reassessed at least every six months.
Hypertrophic obstructive cardiomyopathy	Patients who experience syncope or pre-syncope should not drive until they have been successfully treated.
Valvular disease (especially aortic stenosis)	Patients who experience syncope or pre-syncope or unstable angina should not drive until the underlying disease is corrected.
Time-limited restrictions: cardiac procedures	Driving restrictions for the following cardiac procedures are based on the patient's recovery from the procedure itself and from the underlying disease for which the procedure was performed.
Percutaneous transluminal coronary angioplasty (PTCA)	The patient may resume driving 48 hours to one week after successful PTCA and/or stenting procedures, depending on the patient's baseline condition and course of recovery from the procedure and underlying coronary disease.[217, 218]
Pacemaker insertion or revision	The patient may resume driving one week after pacemaker implantation if: The patient no longer experiences pre-syncope or syncope a. EKG shows normal sensing and capture; and b. Pacemaker performs within manufacturer's specifications.[219]
Cardiac surgery involving median sternotomy	Driving may usually resume four weeks following coronary artery bypass grafting (CABG) and/or valve replacement surgery, and within eight weeks following heart transplant, depending on resolution of cardiac symptoms and the patient's course of recovery. In the absence of surgical or post-surgical complications, the main limitation to driving is the risk of sternal disruption following median sternotomy. If cognitive changes persist following the patient's physical recovery, cognitive testing is recommended before the patient is permitted to resume driving. In addition, on-road testing performed by a driver rehabilitation specialist may be useful in assessing the patient's fitness to drive.
Internal cardioverter defibrillator	Please see the recommendations for nonsustained and sustained ventricular tachycardia (2.c and 2.d in this section).

217. Petch, M. C. (1998) European Society of Cardiology Task Force Report: Driving and Heart Disease. *Eur Heart J*. 19(8):1165–1177.

218. Consensus Conference, Canadian Cardiovascular Society: Assessment of the cardiac patient for fitness to drive. (1992). *Can J Cardiol*. 8:406–412.

219. Ibid.

Section 3: Cerebrovascular disorders

1. Post intracranial surgery
2. Stroke
3. Transient ischemic attacks (TIA)
4. Subarachnoid hemorrhage
5. Vascular malformation
6. Syncope

Strokes and other insults to the cerebral vascular system may cause a wide variety of symptoms, including sensory deficits (e.g., numbness or loss of sensation), motor deficits (e.g., weakness), and cognitive impairment (e.g., memory, hemispatial inattention). These symptoms range from mild to severe and may resolve almost immediately or persist for years. Because each patient is affected uniquely, the physician must take into account the individual patient's constellation of symptoms, severity of symptoms, course of recovery, and baseline function when making recommendations concerning driving. Studies have indicated that a significant number (>40%) of community dwelling stroke patients continue to drive a car.[220] However, the majority of stroke patients (87 %) may not receive any type of formal driving evaluation, but simply resume the operation of a motor vehicle.[221] The larger the presence of a homonymous visual field defect, the more likely it is that the patient will lose his/her driver's license. Unfortunately, many patients may not be aware of this deficit.[222]

Driving should always be discussed prior to the patient's discharge from the hospital or rehabilitation center. Patients with residual deficits who wish to resume driving should be referred to a driver rehabilitation specialist whenever possible. Although the time frame for this evaluation will depend on the severity and extent of the deficits, many evaluations for cognitive and motor defects will occur somewhere between three to six months. Upon stabilization of symptoms, the DRS assesses the patient for fitness-to-drive through clinical and on-road evaluations. After assessment, the DRS may recommend adaptive techniques or adaptive devices (e.g., wide rear view mirror, spinner knob for the steering wheel, left foot accelerator) and provide training for their proper use. Even patients with mild deficits should undergo driver evaluation prior to resuming driving, if possible. Research indicates that a post-stroke determination of driving safety made on a medical basis alone may be inadequate.[223] More recent studies note associations with impairment on road tests with measures of perception, visual selective attention, mental speed, working memory, executive function and complex visual-perception/attention information.[224, 225, 226]

For the patient whose symptoms clearly preclude driving, it should not be assumed that the patient is aware that he/she should not drive. In such cases, the physician should counsel the patient on driving cessation.

220. Legh-Smith, J., Wade, D. T., & Langton Hewer, R. L. (1986). Driving after stroke. *J R Soc Med.* 79: 200–203.

221. Fisk, G.D., Owsley, C., & Vonne Pulley, L. (1997). Driving after stroke: driving exposure, advice, and evaluations. *Arch Phys Med Rehabil.* 78:1338–1345.

222. Poole, D., Chaudry, F., & Jay, W. M. (2008). Stroke and driving. *Topics Stroke Rehab.* 15:37–41.

223. Wilson, T., Smith, T. (1983). Driving after stroke. *Int Rehab Med.* 5(4):170–177.

224. Engrum, E.S., Lambert, E. W., & Scott, K. (1990). Criterion-related validity of the cognitive behavioral driver's inventory: brain injured patients versus normal controls. *Cogn Rehabil.* 1990;8:20–26.

225. Lundberg, C., Caneman G.,, Sven-Marten S.,, et al. (2003). *Scand J Psychol.* 44:23–30.

226. Nouri F. M., & Lincoln N. B. (1993). Predicting driving performance after stroke. *Br Med J.* 307;482–483.

Section 3: Cerebrovascular diseases

Post intracranial surgery

The patient should not drive until stabilization or resolution of disease and surgery symptoms. See also stroke recommendations below (Section 3.2).

Stroke

Patients with acute, severe motor, sensory, or cognitive deficits should refrain from driving. Depending on the severity of residual symptoms and the degree of recovery, this restriction may be permanent or temporary.

Upon the patient's discharge from the hospital or rehabilitation center, the physician may recommend temporary driving cessation until further neurological recovery has occurred. Once neurological symptoms have stabilized, physicians should refer appropriate patients with residual sensory loss, cognitive impairment, visual field defects, and/or motor deficits to a driver rehabilitation specialist for driver assessment and rehabilitation. The specialist may prescribe vehicle adaptive devices and train the patient in their use.

Stroke (continued)

Patients with neglect or inattention should be counseled not to drive until symptoms have resolved and safe driving ability has been demonstrated through assessment by a driver rehabilitation specialist.

All patients with moderate to severe residual hemiparesis should undergo driver assessment before resumption of driving. Even if symptoms improve to the extent that they are mild or completely resolved, patients should still undergo driver assessment, if available, as reaction time may continue to be affected and other comorbid conditions could further increase risk.

Patients with aphasia who demonstrate safe driving ability may fail in their efforts to renew their license due to difficulties with the written examination. In these cases, the physician should urge the licensing authority to make reasonable accommodations for the patient's language deficit. A driving rehabilitation specialist may be able to determine whether the deficit is expressive in nature and thus may allow for interpretation of written (e.g., traffic signs) stimuli. However, traffic signs may still be interpreted based on color, shape, and symbol recognition.

Patients with residual cognitive deficits should be assessed and treated as described in section 4 on Dementia. Periodic re-evaluation of these patients is recommended, as some patients may recover sufficiently over time to permit safe driving.

Transient ischemic attacks (TIA)

Patients who have experienced a single TIA or recurrent TIAs should refrain from driving until they have undergone medical assessment and appropriate treatment.

Subarachnoid hemorrhage

Patients should not drive until symptoms have stabilized or resolved. Driving may resume following medical assessment and, if deemed necessary by the physician, driver evaluation performed by a driver rehabilitation specialist (including on-road assessment).

Vascular malformation

Following the detection of a brain aneurysm or arterio-venous (AV) malformation, the patient should not drive until he/she has been assessed by a neurosurgeon. The patient may resume driving if the risk of a bleed is small; an embolization procedure has been successfully completed; and/or the patient is free of other medical contraindications to driving, such as uncontrolled seizures or significant perceptual or cognitive impairments.

Syncope

Syncope usually results from various cardiovascular causes, and is recurrent in up to 30 percent of cases. Cardiac arrhythmias are the most common cause of syncope.[227] (See Section 2 for causes of cardiac syncope.)

Driving restrictions for neurally mediated syncope should be based on the severity of the presenting event and the anticipant likelihood of recurrence. No driving restrictions are necessary for infrequent syncope that occurs with warning and with clear precipitating causes. Patients with severe syncope may resume driving after adequate control of the arrhythmia has been documented and/or pacemaker follow-up criteria have been met (see 4 in Section 2).[228] For patients who continue to experience unpredictable symptoms after treatment with medications and pacemaker insertion, driving cessation is recommended.

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227. Beers, M. H., & Berkow, R. (eds). (1999). *The Merck Manual of Diagnosis and Therapy,* 17thed. Whitehouse Station, NJ: Merck and Co., Inc. Section 6, Chapter 200.

228. North American Society of Pacing and Electrophysiology/American Heart Association: Personal and Public Safety Issues Related to Arrhythmias That May Affect Consciousness: Implications for Regulation and Physician Recommendations (Part 3 of 4). September 1, 1996.

Section 4: Neurologic diseases

1. Brain tumor
2. Closed head injury
3. Dementia
4. Migraine and other recurrent headache syndromes
5. Movement disorders
6. Multiple sclerosis
7. Paraplegia and quadriplegia
8. Parkinson's disease
9. Peripheral neuropathy
10. Seizure disorder
    a. Single unprovoked seizure
    b. Withdrawal or change of antiepileptic drug therapy
11. Sleep disorders
    a. Narcolepsy
    b. Sleep apnea
12. Stroke
13. Tourette's syndrome
14. Vertigo

Dementia deserves special emphasis in this section because it presents a significant challenge to driving safety. With progressive dementia, patients ultimately lose the ability to drive safely and lack insight. Therefore, dementia patients may be more likely than drivers with visual or motor deficits (who tend to self-restrict their driving to accommodate their declining abilities) to drive even when it is highly unsafe for them to be on the road. It becomes the responsibility of family members and other caregivers to protect the safety of these patients by enforcing driving cessation.

Several recent reviews on this topic may be of interest to physicians.[229, 230] Fitness-to-drive studies in patients with dementia indicate that 90 percent may be able to pass a road test in the very mild stages of the disease (clinical dementia rating of 0.5), whereas 40 percent may fail at a mild level of cognitive impairment (clinical dementia rating of 1.0).[231] Furthermore, most patients with Alzhiemer's disease will eventually fail subsequent road tests when followed longitudinally, indicating that repeat testing at six to twelve months should be strongly considered.[232] Some of these studies have led the American Academy of Neurology to conclude that patients with a mild level of dementia severity or greater should no longer operate an automobile.[233] However, this recommendation has recently been challenged by a longitudinal study that found that some mildly demented drivers not only passed a performance-based road test, but also had an acceptable crash risk prospectively.[234] Furthermore, recent studies indicate that physician evaluation in the office cannot replace the on-the-road assessment;[235] however, tests of working memory and executive function are improving classification rates.[236, 237] Finally, a dementia and driving curriculum modeled after this AMA guide has been shown to improve knowledge, attitudes, confidence, and behaviors for health professionals who deal with older adults with dementia.[238]

This is encouraging information that supports the feasibility and utility of using this guide.

While it is optimal to initiate discussions of driving safety with the patient and family members before driving becomes unsafe, dementia may be undetected and undiagnosed until late in the course of the disease. Initially, family members and physicians may assume that the patient's decline in cognitive function is a part of the "normal" aging process. Physicians may also hesitate to screen for and diagnose dementia because they feel that it is futile—in other words, that nothing can be done to improve the patient's situation or slow disease progression. In addition, physicians may be concerned about the amount of time required to effectively diagnose dementia and educate patients and their families.[239] However, some patients are able to achieve cognitive stability, at least for a period of time, with cholinesterace inhibitors or N-methyl d-aspartate (NMDA) receptor blockers. In addition, patients are now being diagnosed on the "cusp" of the disease in the very early stages. A diagnosis of dementia by itself should not preclude driving.

Physician reluctance to screen for dementia is unfortunate because early diagnosis is the first step in promoting the driving safety of these patients. The second step is intervention, which includes medications to slow or stabilize the course of the disease, counseling to prepare the patient and family for eventual driving cessation, and serial assessment of the patient's driving abilities. When assessment shows that driving may pose a significant safety risk to the patient, driving cessation is a necessary third step. With early planning, patients and their families can make a more seamless transition from driving to nondriving status.

229. Dobbs, B., Carr, D. B., & Morris, J. C. (2002). Management and assessment of the demented driver. *Neurologist*. 8:61–70.

230. Brown, L. B., & Ott, B. R. (2004). Driving and dementia: a review of the literature. *J Geriatr Psychiatry Neurol.* 17:232–240.

231. Hunt L., Murphy C., Carr D., Duchek J., Buckles V., & Morris, J. (1997). The reliability of the Washington University Road Test. *Arch Neurol.* 54:707–712.

232. Duchek, J. M., Carr DB., Hunt L., et al. (2003). Longitudinal driving performance in early stage dementia of the Alzheimer type. *J Am Geriatr Soc*. 51:1342–1347.

233. Dubinsky, RM., Stein, AC., Lyons, K. (2000). Practice parameter: risk of driving and Alzheimer's disease (an evidence-based review) –Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 54, 2205–2211.

234. Ott, BR., Heindel, WC., Papandonatos, GD., et al. (2008). Longitudinal study of drivers with Alzheimer's disease. *Neurology*. 70:1171–1178.

235. Ott, B. R., Anthony, D., Papandonatos, G. D., D'Abreu, A., Burock, J., Curtin, A., Wu, C. K., & Morris, J. C. (2005) Clinician assessment of the driving competence of patients with dementia. *J Am Geriatr Soc*. 53(5):829–833.

236. Grace, J., Amick, M. M., D'Abreu, A., Festa, E. K., Heindel,W. C., & Ott, B. R. (2005). Neuropsychological deficits associated with driving performance in Parkinson's and Alzheimer's disease. *J Int Neuropsychol Soc*. 11(6):766–775.

237. Brown, L. B., Stern, R. A., Cahn-Weiner, D. A., et al. (2005). Driving scenes test of the Neuropsychological Assessment Battery and on-road driving performance in aging and very mild dementia. *Arch Clin Neuropsychol*. 20:209–215

238. Meuser, T. M., Carr, D. B., Berg-Weger, M., Niewoehner, P., & Morris, J. C. (2006). Driving and dementia in older adults: implementation and evaluation of a continuing education project. *Gerontologist*. 46:680–687.

239. Valcour, V. G., Masaki, K. H., Curb, J. D., & Blanchette, P. L. (2000). The detection of dementia in the primary care setting. *Arch Intern Med*. 160:2964–2968.

Section 4: Neurologic diseases

Brain tumor

Driving recommendations should be based on the type of tumor; location; rate of growth; type of treatment; presence of seizures; and presence of cognitive or perceptual impairments. Due to the progressive nature of some tumors, the physician may need to evaluate the patient's fitness to drive serially.

See also the stroke recommendations in Section 3.2.

If the patient experiences seizure(s), please see the seizure disorder recommendations below (4.10 in this section).

Closed head injury

Patients should not drive until symptoms or signs have stabilized or resolved. For patients whose symptoms or signs resolve, driving may resume following medical assessment and, if deemed necessary by the physician, driver evaluation (including on-road assessment) performed by a driver rehabilitation specialist.

Patients with residual neurological or cognitive deficits should be managed as described in Section 3.

If the patient experiences seizure(s), please see the seizure disorder recommendations below.

Dementia

The following recommendations are adapted from the Canadian Consensus Conference on Dementia and the Alzheimer's Association Policy Statement on Driving and Dementia (approved 10/20/01):

- A diagnosis of dementia is not, on its own, a sufficient reason to withdraw driving privileges. A significant number of drivers with dementia are found to be competent to drive in the early states of their illness.[240]Therefore, the determining factor in withdrawing driving privileges should be the individual's driving ability. When the individual poses a heightened risk to self or others, driving privileges must be withheld.
- Physicians should consider the risks associated with driving for all of their patients with dementia, and they are encouraged to address the issue of driving safety with these patients and their families. When appropriate, patients should be included in decisions about current or future driving restrictions and cessation; otherwise, physicians and families must decide in the best interests of the patient whose decision-making capacity is impaired.
- Physicians are recommended to perform a focused medical assessment that includes a history of any new impaired driving behaviors (e.g., new motor vehicle crashes) from a family member or caregiver and an evaluation of cognitive abilities, including memory, attention, judgment, and visuospatial abilities. Physicians should be aware that patients with a progressive dementia who are initially believed to be safe to drive will require serial assessment, and they should familiarize themselves with their State reporting laws and procedures for dementia (if any). (See Chapter 8 for a reference list of State reporting laws.)

If concern exists that an individual with dementia has impaired driving ability, and the individual would like to continue driving, a formal assessment of driving skills should be administered. One type of assessment is an on-road driving assessment performed by a driver rehabilitation specialist.

240. Carr, D. B., Duchek, J., & Morris, J. C. (2000). Characteristics of motor vehicle crashes with dementia of the Alzheimer type. *J Am Geriatr Soc*. 48(1):18–22.

Dementia (continued)	• Physicians should encourage patients with progressive dementia to plan early for eventual cessation of driving privileges by developing alternative transportation options. The patient should be encouraged to coordinate these efforts with his/her family members and caregivers, and to seek assistance (as needed) from the local Area Agency on Aging.
Migraine and other recurrent headache syndromes	Patients with recurrent severe headaches should be cautioned against driving when experiencing neurologic manifestations (e.g., visual disturbances or dizziness); when distracted by pain; and while on any barbiturate, narcotic, or narcotic-like analgesic. (See Section 13 for further recommendations regarding narcotic analgesics.) Patients without a typical aura preceding the acute attack may be at higher risk.
Movement disorders (e.g., parkinsonism, dyskinesias)	If the physician elicits complaints of interference with driving tasks or is concerned that the patient's symptoms compromise his/her driving safety, referral to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) is recommended.
Multiple sclerosis	Driving recommendations should be based on the type of symptoms and level of symptom involvement. Physicians should be alert to deficits that may be subtle (e.g., muscle weakness, sensory loss, fatigue, cognitive or perceptual deficits, symptoms of optic neuritis) but have a strong potential to impair driving performance. A driver evaluation (including on-road assessment) performed by a driver rehabilitation specialist may be useful in determining the patient's safety to drive. Serial evaluations may be required as the patient's symptoms evolve or progress.
Paraplegia and quadriplegia	Referral to a driver rehabilitation specialist is necessary if the patient wishes to resume driving and/or requires a vehicle modified to accommodate him/her as a passenger. The specialist can recommend an appropriate vehicle and prescribe vehicle adaptive devices (such as low-resistance power steering and hand controls) and train the patient in their use. In addition, the specialist can assist the patient with access to the vehicle, including opening and closing car doors, transfer to the car seat, and independent wheelchair stowage, through vehicle adaptations and training. Driving should be restricted until the patient demonstrates safe driving ability in the adapted vehicle.
Parkinson's disease	Patients with advanced Parkinson's disease may be at increased risk for motor vehicle crashes due to both motor and cognitive dysfunction.[241] Physicians should base their driving recommendations on the level of both motor and cognitive symptom involvement, patient's response to treatment, and presence and extent of any medication side effects. (See Section 13 for specific recommendations on antiparkinsonian medications.) Serial physical and cognitive evaluations are recommended every six to twelve months due to the progressive nature of the disease.

241. Zesiewicz, T. A., Cimino, C. R., Malek, A. R., Gardner, N., Leaverton, P. L., Dunne, P. B., & Hauser, R. A. (2002). Driving safety in Parkinson's disease. *Neurology*. 59:1787–1788.

Parkinson's disease (continued)

If the physician is concerned that dementia and/or motor impairments may affect the patient's driving skills, a driver evaluation (including on-road assessment) performed by a driver rehabilitation specialist may be useful in determining the patient's fitness to drive.

Lower extremity deficits in sensation and proprioception may be exceedingly dangerous for driving, as the driver may be unable to control the foot pedals.

Peripheral neuropathy

If deficits in sensation and proprioception are identified, referral to a driver rehabilitation specialist is recommended. The specialist may prescribe vehicle adaptive devices (e.g., hand controls in place of the foot pedals) and train the patient in their use.

Seizure disorder

The recommendations below (in this section only) are adapted from the Consensus Statements on Driver Licensing in Epilepsy, crafted and agreed upon by the American Academy of Neurology, American Epilepsy Society, and Epilepsy Foundation of America in March 1992.[242] Please note that these recommendations are subject to each particular State's licensing requirements and reporting laws.

A patient with seizure disorder should not drive until he/she has been seizure-free for three months. This recommendation appears consistent with recent data.[243] This three-month interval may be lengthened or shortened based on the following favorable and unfavorable modifiers:

Favorable modifiers:

- Seizures occurred during medically directed medication changes
- Patient experiences only simple partial seizures that do not interfere with consciousness and/or motor control
- Seizures have consistent and prolonged aura, giving enough warning to refrain from driving
- There is an established pattern of purely nocturnal seizures
- Seizures are secondary to acute metabolic or toxic states that are not likely to recur
- Seizures were caused by sleep deprivation, and sleep deprivation is unlikely to recur
- Seizures are related to reversible acute illness

242. American Academy of Neurology, American Epilepsy Society, and Epilepsy Foundation of America. (1994). Consensus Statements, Sample Statutory Provisions, and Model Regulations Regarding Driver Licensing and Epilepsy. *Epilepsia*. 35(3):696-705.

243. Drazkowski, J. F., Fisher, R. S., Sirven, J. I., et al. (2003). Seizure-related motor vehicle crashes in Arizona before and after reducing the driving restriction from 12 to 3 months. *Mayo Clin Proc*. 78:819-825.

Seizure disorder (continued)	***Unfavorable modifiers:*** • Noncompliance with medication or medical visits and/or lack of credibility • Alcohol and/or drug abuse in the past three months • Increased number of seizures in the past year • Impaired driving record • Structural brain lesion • Noncorrectable brain functional or metabolic condition • Frequent seizures after seizure-free interval • Prior crashes due to seizures in the past five years • Single unprovoked seizure
Single unprovoked seizure	The patient should not drive until he/she has been seizure-free for three months. This time period may be shortened with physician approval. Predictors of recurrent seizures that may preclude shortening of this time period include: • The seizure was focal in origin • Focal or neurologic deficits predated the seizure • The seizure was associated with chronic diffuse brain dysfunction • The patient has a positive family history for epilepsy • Generalized spike waves or focal spikes are present on EEG recordings
Withdrawal or change of anti-epileptic drug therapy	The patient should temporarily cease driving during the time of medication withdrawal or change due to the risk of recurrent seizure and potential medication side effects that may impair driving ability. If there is significant risk of recurrent seizure during medication withdrawal or change, the patient should cease driving during this time and for at least three months thereafter. If the patient experiences a seizure after medication withdrawal or change, he/she should not drive for one month after resuming a previously effective medication regimen. Alternatively, the patient should not drive for six months if he/she refuses to resume this medication regimen, but is seizure-free during this period.
Sleep disorders *Narcolepsy*	The patient should cease driving upon diagnosis. The patient may resume driving upon treatment when he/she no longer suffers excessive daytime drowsiness or cataplexy. Physicians may consider using scoring tools such as the Epworth Sleepiness Scale to assess the patient's level of daytime drowsiness.[244]
Sleep apnea	See Section 10.
Stroke	See Section 3.

244. Johns, M. W. (1991). A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale. *Sleep*. 14:540–545.

Tourette's syndrome	In evaluating the patient's fitness to drive, the physician should consider any comorbid disorders (including attention deficit hyperactivity disorder, learning disabilities, and anxiety disorder) in addition to the patient's motor tics. (For specific recommendations on these disorders, see Section 5, Psychiatric Disorders). If the physician is concerned that the patient's symptoms compromise his/her driving safety, referral to a driver rehabilitation specialist for on-road assessment is recommended. Physicians should be aware that certain medications used in the treatment of Tourette's syndrome have the potential to impair driving performance. (See Section 13 for more information on medication side effects.)
Vertigo	Vertigo and the medications commonly used to treat vertigo have a significant potential to impair driving skills. For acute vertigo, the patient should cease driving until symptoms have fully resolved. Under no circumstances should the patient drive to seek medical attention. Patients with a chronic vertiginous disorder are strongly recommended to undergo on-road assessment performed by a driver rehabilitation specialist prior to resuming driving.

Section 5: Psychiatric disorders

1. Affective disorders
   a. Depression
   b. Bipolar disorder
2. Anxiety disorders
3. Psychotic illness
   a. Acute episodes
   b. Chronic illness
4. Personality disorders
5. Substance abuse
6. Attention deficit disorder (ADD)/ Attention deficit hyperactivity disorder (ADHD)
7. Tourette's syndrome

Patients in the acute phase of a psychiatric illness need to be aware that driving skills could be affected. In general, driving is safe when the condition is stable, although side effects from medications and compliance with the medication regimen may need to be taken into consideration. (For recommendations on medications and driving, see Section 13, Medications.)

Psychiatrists may wish to consult the American Psychiatric Association's Position Statement on the Role of Psychiatrists in Assessing Driving Ability (American Journal of Psychiatry. 1995. 1S2(5):819; also at *www.psych.org/pract_of_psych/driving_pstate.cfm*).

Section 5: Psychiatric disorders

Affective disorders

Physicians should advise the patient not to drive during the acute phase of illness. Physicians should also be aware that certain medications used in the treatment of affective disorders have the potential to impair driving performance. (See Section 13 for more information on medication side effects.)

Depression

No restrictions if condition is mild and stable. The physician should always specifically ask about suicidal ideation and cognitive and motor symptoms.

Patients should not drive if they are actively suicidal or experiencing significant mental or physical slowness, agitation psychosis, impaired attention, and/or impaired concentration. Patients who seek care for these conditions should be counseled not to drive themselves to the clinic or hospital.

Bipolar disorder

No restrictions if condition is stable.

Patients should not drive if they are actively suicidal, depressed as in 1.a (above) or in an acute phase of mania. Patients who seek care for these conditions should be counseled not to drive themselves to the clinic or hospital.

Anxiety disorders

Patients should not drive during severe episodes of anxiety. Otherwise, there are no restrictions if the condition is stable.

Physicians should also be aware that certain medications used in the treatment of anxiety disorders have the potential to impair driving performance. (See Section 13 for more information on medication side effects.)

Psychotic illness	Physicians should advise the patient not to drive during the acute phase(s) of illness. Physicians should also be aware that medications used in the treatment of psychotic illness have the potential to impair driving performance. (See Section 13 for more information on medication side effects.)
Acute episodes	Patients should not drive during acute episodes of psychosis. Patients who seek care for acute psychosis should be counseled not to drive themselves to the clinic or hospital.
Chronic illness	No restrictions if the condition is stable and there are no other factors (e.g., medication side effects) that can affect driving performance.
Personality disorders	No restrictions unless the patient has a history of driving violations and his/her psychiatric review is unfavorable. This includes—but is not limited to—uncontrolled erratic, violent, aggressive or irresponsible behavior. Due to the high comorbidity of substance abuse with personality disorders, physicians are urged to be alert to substance abuse in these patients and counsel them accordingly (see recommendations for substance abuse below).
Substance abuse	Driving while intoxicated is not only highly dangerous to the driver, passengers, and other road users, but it is also illegal. Drunk driving is the most common crime in the United States, and it is responsible for thousands of traffic deaths each year. Alcohol is not the only cause of intoxicated driving. Substances including, but not limited to, marijuana, cocaine, amphetamines (including amphetamine analogs), opiates, and benzodiazepines may also impair driving skills. Physicians should follow up all positive screens with appropriate interventions, including brief interventions or referral to support groups, counseling, and substance abuse treatment centers. Physicians should strongly urge substance abusers to temporarily cease driving while they seek treatment, and to refrain from driving while under the influence of intoxicating substances. A nonjudgmental and supportive attitude and frequent follow-up may aid substance abusers in their efforts to achieve and maintain sobriety. Physicians should also familiarize themselves with any State laws holding them responsible for detaining intoxicated patients who have driven to the hospital or clinic until they are legally unimpaired.
Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder	A recent review noted increased risk of driving behaviors and a positive effect of stimulant medications on driving performance.[245] Physicians should educate their patients about the increased risk associated with the disease and the potential benefits of treatment.
Tourette's syndrome	See Section 4.

245. Barkley, R. A., & Cox, D. (2007). A review of driving risks and impairments associated with attention-deficit/hyperactivity disorder and the effects of stimulant medication on driving performance. *Journal of Safety Research.* 38(1):113–28.

Section 6: Metabolic disorders

1. Diabetes mellitus
   a. Insulin dependent diabetes mellitus (IDDM)
   b. Non-insulin dependent diabetes mellitus (NIDDM)
2. Hypothyroidism
3. Hyperthyroidism

Individuals in the acute phase of a metabolic disorder (e.g., diabetes, Cushing's disease, Addison's disease, hyperfunction of the adrenal medulla, and thyroid disorders) may experience signs and symptoms that are incompatible with safe driving. Physicians should advise these individuals to refrain from driving (including driving to seek medical attention) until the symptoms have abated. There are data that suggest that older diabetic patients may be at increased risk for impaired driving, but the literature is not consistent in this area. Concern has been raised that the trend in the medical profession has been toward tighter control, which could result in hypoglycemia and possibly increased crash risk.

Section 6: Metabolic disorders

Diabetes mellitus

Insulin dependent diabetes mellitus (IDDM)

No restrictions if the patient demonstrates satisfactory control of his/her diabetes, recognizes the warning symptoms of hypoglycemia, and meets required visual standards.

The major concerns with insulin dependent diabetics are hypoglycemia unawareness. There are several studies that have noted that patients with type 1 IDDM had impaired driving performance during episodes of hypoglycemia and were unaware of their low blood sugars at the time of driving assessment.[246, 247]

It is apparent from these studies that many drivers did not take appropriate action even when they recognized the symptoms of hypoglycemia. Diabetic patients who use insulin should be evaluated for hypoglycemia and should consider checking their blood sugar before driving or on prolonged trips. This is especially the case for individuals who have exhibited hypoglycemia unawareness (e.g., documented blood sugars below 60 mg/dL without symptoms).

Patients should be counseled not to drive during acute hypoglycemic or hyperglycemic episodes. In addition, patients are advised to keep candy or glucose tablets within reach in their car at all times, in the event of a hypoglycemic attack.

For peripheral neuropathy, see Section 4.

Patients who experience recurrent hypoglycemic or hyperglycemic attacks should not drive until they have been free of significant hypoglycemic or hyperglycemic attacks for three months.

Non-insulin dependent diabetes mellitus (NIDDM)

Patients who are managed by lifestyle changes and/or oral medications have no restrictions unless they develop relevant disabilities (e.g., diabetic retinopathy). If the physician prescribes an oral medication that has a significant potential to cause hypoglycemia, he/she should counsel the patient as above. Oral medications may also increase the likelihood of hypoglycemia, which should be managed as in 1.a in this section.

246. Weinger, I., Kinsley, B. T., Levy, C. J., et al. (1999). The perception of safe driving ability during hypoglycemia in patients with type I diabetes. *Am J Med*. 107:246–253.

247. Cox, D. J., Gonder-Frederick, L. A., Kovatchev, B. P., et al. (2000). Progressive hypoglycemia's impact on driving simulation performance: occurrence, awareness, and correction. *Diabetes Care*. 23:163–170.

Hypothyroidism	Patients who experience symptoms (e.g., cognitive impairment, drowsiness, and fatigue) that may compromise safe driving should be counseled not to drive until their hypothyroidism has been satisfactorily treated. If residual cognitive deficits are apparent despite treatment, a driver evaluation (including on-road assessment) performed by a driver rehabilitation specialist may be useful in determining the patient's ability to drive safely.
Hyperthyroidism	Patients who experience symptoms (e.g., anxiety, tachycardia, palpitations, etc.) should be counseled not to drive until their hyperthyroidism has been satisfactorily treated and symptoms have resolved.

Section 7: Musculoskeletal disabilities

1. Arthritis
2. Foot abnormalities
3. Limitation of cervical movement
4. Limitation of thoracic and lumbar spine
5. Loss of extremities or loss of use of extremities
6. Muscle disorders
7. Orthopedic procedures/surgeries
   a. Amputation
   b. Anterior cruciate ligament (ACL) reconstruction
   c. Limb fractures and treatment involving splints and casts
   d. Rotator cuff repair—open or arthroscopic
   e. Shoulder reconstruction
   f. Total hip replacement
   g. Total knee arthroplasty (TKA)

The pain, decrease in motor strength, and compromised range of motion associated with musculoskeletal disabilities can affect an individual's ability to drive. Physicians should encourage their patients with musculoskeletal disabilities to drive a vehicle with power steering and automatic transmission, if they do not already do so. Such vehicles require the least amount of motor ability for operation among all standard vehicles. If the physician is concerned that the patient's musculoskeletal disabilities impair his/her driving performance, referral to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) is also recommended. In addition to assessing the patient's driving skills, the specialist can prescribe adaptive techniques and devices and train the patient in their use.

Patients with musculoskeletal disorders, typically have problems with seat belt and ignition key use, adjusting mirrors and seats, in steering, in transferring in and out of the car, in driving in reverse, and in using the controls like the foot pedal.[248] Driving impairment has been correlated with the inability to reach above the shoulder.[249] Older adults with physical frailty or disabilities may be at increased risk for a crash,[250, 251] and are more likely to be injured.[252] Presence of foot abnormalities, walking less than one block a day, and impaired left knee flexion have been associated with adverse driving events.[253] In one study, older crash-involved subjects were more likely to have difficulty walking one-quarter mile than controls; and the authors also noted an increased crash risk for drivers with a history of falls.[254] Diminished cervical range of motion and a slowed rapid pace walk have also been recently associated with an increased crash risk.[255]

The use of nonsteroidal anti-inflammatory agents (NSAIDs) and a diagnosis of arthritis were associated with increased at-fault crash risk in a recent study.[256] Similarly, an examination of medically impaired drivers in Utah found an increased crash risk for drivers with musculoskeletal disorders, but not for those with muscle or motor weakness.[257] Conversely, patients with a specific diagnosis of osteoarthritis[258] were no more at risk for a crash than controls in one study. Also reassuring was a recent study noting no increase in crash risk of drivers with cars that had been adapted for their musculoskeletal restrictions.[259] Thus, physicians can play a role in diagnosing, managing, and referring their patients with musculoskeletal disorders and, ideally, play a role in maintaining driving privileges and improving traffic safety.

Rehabilitative therapies such as physical or occupational therapy and/or a consistent regimen of physical activity may improve the patient's ability to drive and overall level of physical fitness.

Whenever possible, the use of narcotics, barbiturates, and muscle relaxants should be avoided or minimized in those patients with musculoskeletal disabilities who wish to continue driving. See Section 13 for recommendations on specific classes of medications.

248. Jones, J. G., McCann, J., & Lassere, M. N. (1991). Driving and arthritis. Br J Rheumatol. 1991;30:361-364.

249. Hu, PS., Trumble, DA., Foley, DJ., et al. (1998). Crash risks of older drivers: a panel data analysis Accid Anal Prev. 30:569-581.

250. Sims, R. V., McGwin, G., Allman, R. M., et al. (2000). Exploratory study of incident vehicle crashes among older drivers. J Gerontol Series A Bio Sci Med Sci. 55:M22-27.

251. Marottoli, R. A., Wagner, D. R., Cooney, L. M., & Tinetti, M. E. (1994). Predictors of crashes and moving violations among elderly drivers. Ann Intern Med. 1994;121:842-846.

252. Kent, R., Funk, J., &Crandall, J. (2003). How future trends in societal aging, air bag availability, seat belt use, and fleet composition will affect serious injury risk and occurrence in the United States. Traff Inj Prev. 4:24-32.

253. Marottoli, R. A., Wagner, D. R., Cooney, L. M., & Tinetti, M. E. (1994). Predictors of Crashes and Moving Violations Among Elderly Drivers. Ann Int Med 121: 842-846.

254. Sims, R. V., McGwin, G., Pulley, L., et al. (2001). Mobility impairments in crash-involved drivers. J Aging Health. 12:430.s.

255. Ball, K. K., Roenker, D. L., Wadley, V. G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? J Am Geriatr Soc. 54:77-84.

256. McGwin, G., Sims, R. V., Pulley, L., et al. (2000). Relations among chronic medical conditions, medications, and automobile crashes in the elderly: a population-based case-control study. Am J Epidemiol. 152: 424-431.

257. Vernon, D. D., Diller, E. M., Cook, L. J., et al. (2002). Evaluating the crash and citations rates of Utah drivers licensed with medical conditions, 1992-1996. Accid Anal Prev. 34: 237-246.s

258. Koepsell, T., Wolf, M. , & McCloskey, L. (1994). Medical conditions and motor vehicle collision injuries in older adults. J Am Geriatr Soc. 42,695-700.

259. Henriskkson, P. (2001). Drivers with Disabilities: A Survey of Adapted Cars, Driving Habits and Safety. VTI rapport 466. Linkoping, Sweden: Swedish National Road and Transport Research Institute.

Section 7: Musculoskeletal disabilities

Arthritis	If symptoms of arthritis compromise the patient's driving safety, referral to a physical or occupational therapist for rehabilitative therapy and/or to a driver rehabilitation specialist for driver evaluation (including on-road assessment) is recommended. The specialist may prescribe vehicle adaptive devices and train the patient in their use. See below for specific recommendations on limitation of cervical movement or limitation of the thoracic or lumbar spine.
Foot abnormalities	Foot abnormalities (e.g., bunions, hammer toes, long toe nails, and calluses) that affect the patient's dorsiflexion, plantar flexion and/or contact with vehicle foot pedals should be addressed and treated, if possible. Consideration should be given to referral to a podiatrist. The physician may also refer the patient to a driver rehabilitation specialist, who can prescribe vehicle adaptive devices and train the patient in their use.
Limitation of cervical movement	Some loss of head and neck movement is acceptable if the patient has sufficient combined rotation and peripheral vision to accomplish driving tasks (e.g., turning, crossing intersections, parking, backing up) safely. The physician may also refer the patient to physical or occupational therapist for rehabilitative therapy, and/or to a driver rehabilitation specialist, who can prescribe wide-angled mirrors and train the patient in their use.
Limitation of thoracic or lumbar spine	Patients with marked deformity, who wear braces or body casts, or who have painfully restricted motion in their thoracic or lumbar regions should be referred to a driver rehabilitation specialist. The specialist can prescribe vehicle adaptive devices such as raised seats and wide-angled mirrors, and train the patient in their use. The specialist can also prescribe seat belt adaptations as needed to improve the patient's safety and comfort, and ensure that the patient is seated at least 10 inches from the vehicle air bags. Patients with acute spinal fractures, including compression fractures, should not drive until the fracture has been stabilized and painful symptoms cease to interfere with control of the motor vehicle. These types of fractures can be extremely painful and require large doses of narcotics for control of pain, which also can increase risk. (For paraplegia or quadriplegia, see Section 4.)
Loss of extremities or loss of use of extremities	For patients who have lost (or lost the use) of one or more extremities, referral to a driver rehabilitation specialist is highly recommended. These specialists can prescribe vehicle adaptive devices and/or adaptations to limb prostheses, and train the patient in their use. Note that the use of artificial limbs on vehicle foot pedals is unsafe because there is no sensory feedback (i.e., pressure and proprioception). For these patients, specialized hand controls in place of pedals are required. Driving should be restricted until the patient demonstrates safe driving ability (with the use of adaptive devices, as needed).

Muscle disorders	If the physician is concerned that the patient's symptoms compromise his/her driving safety, referral to a driver rehabilitation specialist for driver evaluation (including on-road assessment) is recommended. If needed, the specialist may prescribe vehicle adaptive devices and train the patient in their use.
Orthopedic procedures/surgeries	
Amputation	See Loss of extremities (previous page).
Anterior cruciate ligament (ACL) reconstruction	Should not drive for four weeks following right ACL reconstruction. If the patient drives a vehicle with manual transmission, he/she should not drive for four weeks following right or left ACL reconstruction.[260]
Limb fractures and treatment involving splints and casts	No restrictions if the fracture or splint/cast does not interfere with driving tasks. If the fracture or splint/cast interferes with driving tasks, the patient may resume driving after the fracture heals or the splint/cast is removed, upon demonstration f the necessary strength and range of motion.
Rotator cuff repair—open or arthroscopic	Should not drive for four to six weeks following rotator cuff repair. If the patient's vehicle does not have power steering, the waiting period may be much longer. Physicians should counsel patients to wear their seat belts properly (over the shoulder, rather than under the arm) whenever they are in a vehicle as a driver or passenger.
Shoulder reconstruction	Should not drive for four to six weeks following shoulder reconstruction. If the patient's vehicle does not have power steering, the waiting period may be much longer. Physicians should counsel patients to wear their seat belts properly (over the shoulder, rather than under the arm) whenever they are in a vehicle as a driver or passenger.
Total hip replacement	Should not drive for at least four weeks following right total hip replacement. If the patient drives a vehicle with manual transmission, he/she should not drive for at least four weeks following right or left total hip replacement. Physicians should counsel patients to take special care when transferring into vehicles and positioning themselves in bucket seats and/or low vehicles, either of which may result in hip flexion greater than 90 degrees. Physicians should also counsel patients that reaction time may not return to baseline until eight weeks after the surgery, and that they should exercise extra caution while driving during this period. [261]

260. Gotlin, R. S., et al. (2000). Measurement of brake response time after right anterior cruciate ligament reconstruction. Arch Physical Med Rehabil. 81(2):201-204.

261. MacDonald, W., & Owen, J. W. (1988). The effect of total hip replacement on driving reactions. J Bone Joint Surg. 70B(2):202-205

Total knee arthroplasty (TKA)	Should not drive for three to four weeks following right TKA. If the patient drives a vehicle with manual transmission, he/she should not drive for three to four weeks following right *or* left TKA.[262] The physician should also counsel patients that reaction time may not return to baseline until eight weeks after the surgery, and that they should exercise extra caution while driving during this period.[263]

262. Pierson, J. L., Ramsey, J., Clayton, R. T., & Stippich, K. T. (February 7, 1999). TKA improves drivers' brake reaction time. The American Academy of Orthopaedic Surgeons: *Academy News*.

263. Spalding, T. J., Kiss, J., Kyberd, P., Turner-Smith, A., & Simpson, A. H. (1994). Driver reaction times after total knee replacement. *J Bone Joint Surg Br*. 76(5):754–756.

Section 8:
Peripheral vascular diseases

1. Aortic aneurysm
2. Deep vein thrombosis (DVT)
3. Peripheral arterial aneurysm

Section 8: Peripheral vascular diseases

Aortic aneurysm	No restrictions to driving unless other disqualifying conditions are present. Individuals whose aneurysm appears to be at the stage of imminent rupture based on size, location, and/or recent change should not drive until the aneurysm has been repaired, if possible.
Deep vein thrombosis (DVT)	Patients with acute DVT may resume driving when their international normalized ratio (INR) is therapeutic (or the risk of embolism is otherwise appropriately treated), and they can demonstrate adequate ankle dorsiflexion. The physician should advise individuals with a history of DVT to take frequent "mobilization breaks" when driving long distances.
Peripheral arterial aneurysm	No restrictions unless other disqualifying conditions are present. Patients whose aneurysm appears to be at the stage of imminent rupture based on size, location, and/or recent change should not drive until the aneurysm has been repaired, if possible.

Section 9: Renal disease

1. Chronic renal failure
2. Renal transplant

Section 9: Renal disease

Chronic renal failure	No restrictions unless the patient experiences symptoms that are incompatible with safe driving (e.g., cognitive impairment, impaired psychomotor function, seizures, or extreme fatigue from anemia). If the physician is concerned that the patient's symptoms compromise his/her driving safety, referral to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) is recommended. Many patients with renal failure requiring hemodialysis can drive without restriction. However, management of renal failure requires that the patient be compliant with substantial nutrition and fluid restrictions, frequent medical evaluations, and regular hemodialysis treatments. Patients with a history of noncompliance should be advised against driving. Furthermore, certain medications used to treat side effects of hemodialysis may be substantially impairing (e.g., diphenhydramine for dialysis-associated pruritis), and dialysis itself may result in hypotension, confusion, or agitation in many patients. These effects may require that patients avoid driving in the immediate post-dialysis period.
Renal transplant	Patients may resume driving four weeks following successful transplant on the recommendation of the physician.

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Section 10: Respiratory diseases

1. Asthma
2. Chronic obstructive pulmonary disease (COPD)
3. Sleep apnea

"Drowsy driving" or driving with fatigue or sleepiness is a common cause for a motor vehicle crash, and some estimate that more than 100,000 crashes a year may be attributed to this problem. Crash risk increases with diminishing sleep.[264] Sleep disorder crash risk may be elevated further by medication use, such as narcotics or antihistamine.[265] Sleep apnea patients have been noted to have as high as a seven-fold increased crash risk compared to controls depending on the study.[266] Patients may also be at increased risk for serious injury.[267] This topic has been extensively reviewed elsewhere.[268] Obstructive sleep apnea is one of the few medical conditions where treatment has been shown to reduce crash risk back to baseline levels.[269] In addition, recent studies indicate a high prevalence of sleep disorders or daytime sleepiness in older adults[270] and in diabetic patients.[271]

264. Garharino, S., Nohili, L., Beelke, M., De Carli, F., & Ferrillo, F. (2001). The contributing role of sleepiness in highway vehicle accidents. Sleep. 24:203-206.
265. Howard, M.E., et al. (2004). Sleepiness, sleep-disordered breathing and accident risk factors in commercial vehicle drivers. Am J Respir Crit Care Med. 170:1014-1021.
266. Teran-Santos, J., Jimenez-Gomez, A., & Cordero-Guevara, J. (1999). The association between sleep apnea and the risk of traffic accidents. Cooperative Group Burgos-Santander. N Engl J Med. 340(11):847-851.
267. Medical News Today. (n.a.) Risk of severe car crashes greatly increased in sleep apnea patients. http://www.medicalnewstoday.com/articles/71543.php.
268. Charlton, J., et al. (2004). Influence of chronic illness on crash involvement of motor vehicle drivers, Monash University Accident Research Centre, Report No. 213.
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270. Vaz Fragoso, Arauio, K. L., Van Ness, P. H., & Marottoli, R. A. (2008). Prevalence of sleep disturbances in a cohort of older drivers. J Gerontol Series A Bio Sci Med Sci. 63:715-723.
271. Hayashino, Y., Yamazaki, S., Nakayama, T., et al. (2008). Relationship between diabetes mellitus and excessive sleepiness during driving. Exp Clin Endocrinol Diabetes. 116:1-5.

Section 10: Respiratory diseases

Asthma	No restrictions. Patients should be counseled not to drive during acute asthma attacks, or while suffering transient side effects (if any) from their asthma medications.
Chronic obstructive pulmonary disease (COPD)	No restrictions if symptoms are well controlled, and the patient does not experience any significant side effects from the condition or the medication. The patient should not drive if he/she suffers dyspnea at rest or at the wheel (even with the use of supplemental oxygen), excessive fatigue, or significant cognitive impairment. If the patient requires supplemental oxygen to maintain a hemoglobin saturation of 90 percent or greater, he/she should be counseled to use the oxygen at all times while driving. Due to the often tenuous oxygenation status of these patients, they should also be counseled to avoid driving when they have other respiratory symptoms that may indicate concomitant illness or exacerbation of COPD (e.g., new cough, increased sputum production, change in sputum color, fever). Because COPD is often progressive, periodic reevaluation for symptoms and oxygenation status is recommended. If the physician is concerned that the patient's symptoms compromise his/her driving safety, referral to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) is recommended. The patient's oxygen saturation may be measured during the course of the on-road assessment to provide additional information for patient management.

Sleep apnea	Patients with excessive daytime sleepiness, loud snoring (particularly if accompanied by witnessed apneic events), large neck circumference (≥ 16 inches in women, ≥ 17 inches in men), elevated body mass index (above 35 kg/m2), and/or hypertension that requires two or more medications should be considered at risk for obstructive sleep apnea, and formal sleep study evaluation should be considered, especially in any patient who reports having fallen asleep while driving a vehicle. A patient diagnosed with sleep apnea (apnea/hypopnea index of 5 or greater) who has fallen asleep while driving, or a patient with severe obstructive sleep apnea (apnea/hypopnea index of 30 or greater) should be counseled to refrain from driving until he/she is receiving effective treatment (via a positive airway pressure device) following a formal sleep study to confirm the diagnosis. If these patients undergo other treatments (surgery, oral appliances), they should be advised to have a post-treatment sleep study to confirm effectiveness. Physicians should counsel patients using positive airway pressure devices that they should not drive if they do not use the device unless a formal sleep study confirms resolution of their obstructive sleep apnea (e.g., following substantial weight loss).

Section 11: Effects of anesthesia and surgery

1. Abdominal, back, and chest surgery
2. Anesthesia
   a. General
   b. Local
   c. Epidural
   d. Spinal
3. Neurosurgery
4. Orthopedic surgery

Physicians should be alert to peri- and post-operative risk factors that may affect the patient's cognitive function post-surgery, or restrictions on limb movement or joint range of motion that place the patient at risk for impairments in driving performance. Risk factors include:

- Pre-existing cognitive impairment
- Duration of surgery
- Age (over 60)
- Altered mental status post-surgery
- Presence of multiple comorbidities
- Emergency surgery

If the physician is concerned that residual visual, cognitive or motor deficits following surgery may impair the patient's driving performance, referral to a driver rehabilitation specialist for a driver evaluation (including on-road assessment) is highly recommended.

Physicians should counsel patients who undergo surgery—both inpatient and outpatient—not to drive themselves home following the procedure. Although they may feel capable of driving, their driving skills may be affected by pain, physical restrictions, anesthesia, cognitive impairment, and/or analgesics. (For specific recommendations on musculoskeletal restrictions and narcotic analgesics, please see Sections 7 and 13, respectively.)

In counseling patients about their return to driving after a surgical procedure, it is useful to ask whether the patient's car has power steering and automatic transmission. Physicians can tailor their advice accordingly.

As patients resume driving, they should be counseled to assess their comfort level in familiar, traffic-free areas before driving in heavy traffic. If the patient feels uncomfortable driving in certain situations, he/she should avoid these situations until his/her confidence level has returned. A patient should never resume driving before he/she feels ready to do so and has received approval from the physician.

Section 11: Effects of anesthesia and surgery

Abdominal, back and chest surgery	The patient may resume driving after demonstrating the necessary strength and range-of-motion for driving. See Section 2 for recommendations for surgeries involving median sternotomy.
Anesthesia	Because anesthetic agents and adjunctive compounds (such as benzodiazepines) may be administered in combination, the patient should not resume driving until the motor and cognitive effects from all anesthetic agents have subsided.
General	Both the surgeon and anesthesiologist should advise patients against driving for at least 24 hours after a general anesthetic has been administered. Longer periods of driving cessation may be recommended depending on the procedure performed and the presence of complications.
Local	If the anesthetized region is necessary for driving tasks, the patient should not drive until he/she has recovered full strength and sensation (barring pain).
Epidural	The patient may resume driving after recovering full strength and sensation (barring pain) in the affected areas.
Spinal	The patient may resume driving after recovering full strength and sensation (barring pain) in the affected areas.

Neurosurgery	See recommendations for post intracranial surgery in Section 3.
Orthopedic surgery	See the recommendations for orthopedic procedures/surgeries in Section 7.

Section 12:
Miscellaneous conditions

1. Cancer

Section 12: Miscellaneous conditions

Cancer	Patients who experience significant motor weakness or cognitive impairments from the cancer itself, metastases, cachexia, anemia, radiation therapy, and/or chemotherapy, which can cause cognitive impairment and/or neuropathy, should cease driving until their condition improves and stabilizes. Many medications prescribed to relieve the side effects of treatment (e.g., antiemetics for nausea) may impair driving performance. Physicians should counsel their patients accordingly. (See Section 13 for recommendations for specific medications.)

Section 13: Medications

1. Alcohol
2. Anticholinergics
3. Anticonvulsants
4. Antidepressants
   a. Bupropion
   b. Mirtazapine
   c. Monoamine oxidase (MAO) inhibitors
   d. Selective serotonin reuptake inhibitors (SSRIs)
   e. Tricyclic antidepressants (TCAs)
5. Antiemetics
6. Antihistamines
7. Antihypertensives
8. Antiparkinsonians
9. Antipsychotics
10. Benzodiazepines and other sedatives/anxiolytics
11. Muscle relaxants
12. Nonsteroidal anti-inflammatory drugs (NSAIDs)
13. Narcotic analgesics
14. Stimulants

Many commonly used prescription and over-the-counter medications can impair driving performance. In general, any drug with a prominent central nervous system (CNS) effect has the potential to impair an individual's ability to operate a motor vehicle. The level of impairment varies from patient to patient, between different medications within the same therapeutic class, and in combination with other medications or alcohol.

Many classes of medication have been associated with increased crash risk or impaired driving skills when assessed by simulators or road tests. These include, but are not limited to hypnotics, alcohol, antiepileptic agents, anti-emetic agents, narcotics, barbiturates, benzodiazepines, antihistamines, antidepressants, antipsychotics, and muscle relaxants. Some of the highest crash rates have been noted with long-acting benzodiazepines when prescribed to older adults.[272] Other studies suggest that a significant number of older adults may be driving while under the influence of other medications.[273, 274]

Potential driving impairing (PDI) medications is a relatively new term that identifies medications that have been associated with increased crash risk. Crash risk does increase when multiple PDI drugs are prescribed.[275] Mechanisms whereby drugs may impair driving are myriad and include: sleepiness, fatigue, or sedation; lightheadness, dizziness, or low blood pressure; blackouts or syncope; or impaired judgment coordination. Medications can affect eyesight in numerous ways, including blurred vision, impaired visual fields, and nighttime vision.[276] However, it should be noted that many medication and driving studies are usually correlational in nature, and may suggest increased crash risk but not necessarily causation. Whether it is the medication itself, the condition for which it is prescribed, the presence of other comorbidities, or a combination of these issues is often difficult to sort out.[277] Clinicians should be aware of the risk and attempt to use the safest class of medications based on the most recent evidence. An excellent review of this subject for pharmacists may be of interest to physicians and is available on-line.[278]

Medication side effects that can affect driving performance include drowsiness, dizziness, blurred vision, unsteadiness, fainting, slowed reaction time, and extrapyramidal side effects. In many cases, these side effects are dose-dependent and may attenuate with time.

Whenever possible, the physician should prescribe non-impairing medications. If the physician must prescribe or change the dosage of a medication that can potentially impair driving performance, he/she should counsel the patient about the side effects. The physician should also recommend that the patient take the first few doses in a safe environment to determine the presence and extent of any side effects, and that he/she temporarily cease driving as needed until the body has adjusted to the medication.

In addition to being alert to potential side effects, the patient, caregivers, and physicians should also understand that with certain medications, subjective effects do not always correlate with impairment.[279] Medications that cause drowsiness, euphoria, and/or anterograde amnesia may also diminish insight, and the patient may experience impairment without being aware of it.

272. Hemmelgarn, B., Suissa, S., Huang, A., et al. (1997). Benzodiazepine use and the risk of motor vehicle crash in the elderly. *JAMA*. 278:27–31.

273. Higgins, J. P., Wright, S. W., & Wrenn, K. D. (1996). Alcohol, the elderly, and motor vehicle crashes. *Am J Emerg Med*. 14:265–267.

274. Johansson, K., Bryding, G., Dahl, M. L., et al.(1997). Traffic dangerous drugs are often found in fatally injured older male drivers. *J Am Geriatr Soc*. 45:1029–1031.

275. Leroy, A., & Morse, M. M. (N.A.). Exploratory Study of the Relationship Between Multiple Medications and Vehicle Crashes: Analysis of Databases. NHTSA Contract DTNH22-02-C-05075. Publication under review. [Published as Multiple Medications and Vehicle Crashes: Analysis of Databases. (2008, May). NHTSA Report No. DOT HS 810 858. Washington, DC: National Highway Traffic Safety Administration. Available at *www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/810858.pdf*.]

276. Wang, K.(2007). Adverse Ocular Side-Effects of Commonly Prescribed Systemic Medications. Online CE provided by Pacific University College of Optometry. *www.Opt.pacifcu.edu/ce/catalog/11466-PHWandgDrugs.html*. Accessed October 21, 2007.

277. Bramness, JG., Skurtvelt, S., Neutel, CI., et al. (2008). Minor increase in traffic accidents after prescriptions of antidepressants: a study of population registry data in Norway. *J Clin Psychiatry*. 69:1099–1103.

278. Walgreens Health Services. Continuing Pharmacy Education Web Site. Medication-Related Impaired Driving: For Pharmacist. *https://webapp.walgreens.com/cePharmacy/programsHTML/transportation-tech.pdf*. Accessed November 16, 2007.

279. Mattila, M. (1988). Acute and subacute effects of diazepam on human performance: comparison of plain tablet and controlled release capsule. *Pharmacol Toxicol*. 63(5):369–374.
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impairment, subjective effects and abuse liability. *J Pharmacol Exp Therapeut*. 234(1):120–133.
Aranko, K., Mattila, M. J., & Bordignon, D. (1985). Psychomotor effects of alprazolam and diazepam during acute and subacute treatment, and during the follow-up phase. *Acta Pharmacologica Toxicologica*. 56(5):364–372.
Weiler, JM., et al. (2000). Effects of fexofenadine, diphenhydramine, and alcohol on driving performance. a randomized placebo-controlled trial in the Iowa Driving Simulator. *Ann Intern Med*. 132(5):354–363.

When prescribing new medications, the physician should always consider the patient's existing regimen of prescription and nonprescription medications. Combinations of drugs may affect drug metabolism and excretion, and produce additive or synergistic interactions. In fact, use of multiple psychoactive medications is a common cause of hospitalization for delirium among older adults.[280] Because individuals react differently to drug combinations, the degree of impairment caused by polypharmacy may vary from patient to patient. With polypharmacy's strong but unpredictable potential to produce impairment, physicians should add new medications at the lowest dosage possible, counsel the patient to be alert to any impairing side effects, and adjust the dosages of individual medications as needed to achieve therapeutic effects with a minimum of impairment.

280. Ray, W. A., Purushottam, B. T., Shorr, R. I. (1939). Medications and the older driver. *Clin Geriatr Med.* 9(2):413–438.

Section 13: Medications

Alcohol

As little as one serving of alcohol (1.25 oz. 80-proof liquor, 12 oz. beer, 5 oz. wine) has the potential to impair driving performance in many individuals. Due to age-related changes in body metabolism (e.g., increased body fat and decreases in lean muscle mass), the same weight-adjusted amount of alcohol (hydrophilic) is likely to result in higher blood levels of alcohol and functional impairment in advanced age. In many cases, individuals may be impaired without being aware of it. Furthermore, alcohol can potentiate the CNS effects of medications to produce profound and dangerous levels of impairment. **Physicians should always warn their patients against drinking and driving, and against combining alcohol and their CNS-active medications.**

For recommendations on substance abuse, see Section 5.

Anticholinergics

When a patient takes single or multiple medications with anticholinergic activity, including some antidepressants, antihistamines, antiemetics, antipsychotics, and antiparkinsonian drugs, the physician should be alert to the possibility of anticholinergic toxicity and adjust medication dosages accordingly.

Anticholinergic effects that can impair driving performance include blurred vision, sedation, confusion, ataxia, tremulousness, and myoclonic jerking. Patients should be counselled about these symptoms and should alert their physicians immediately if they occur. Patients should also be advised that psychomotor and cognitive impairment might be present even in the absence of subjective symptoms (this has been well documented for antihistamines).

Subtle deficits in attention, memory, and reasoning may occur with therapeutic dosages of anticholinergic drugs without signs of frank toxicity. These deficits have often been mistaken for symptoms of early dementia in elderly patients. Physicians are advised to be aware of this possibility.

Anticonvulsants

The patient should temporarily cease driving during the time of medication initiation, withdrawal, or dosage change due to the risk of recurrent seizure and/or potential medication side effects that may impair driving performance.

If there is significant risk of recurrent seizure during medication withdrawal or change, the patient should cease driving during this time and for at least three months thereafter.

Note that many anticonvulsants (e.g., valproic acid, carbamazepine, gabapentine, lamotrigine and topiramate) are also being used as mood stabilizers for treatment of bipolar disorder, for agitation in dementia, and as sedating agents for anxiety. These agents are typically an adjunct to antidepressants, antipsychotics and/or anxiolytics. By themselves, anticonvulsants may be mildly impairing, but the combined medication effects on psychomotor performance tend to enhance their effects. When prescribing anticonvulsants and other psychoactive drugs, it is wise to start with low doses of each and gradually increase the dosage of each one separately to minimize significant side effects. In addition, this would allow for a clear identification of which drug may be producing a benefit or problem.

Antidepressants

Impairing side effects vary among the different classes of antidepressants, and even within certain classes of antidepressants. (In general, antidepressants that possess antagonistic activity at cholinergic, alpha-1-adrenergic, and histaminergic receptors are the most impairing.) Recent data have also implicated venlafixine as being associated with motor vehicle crashes.[281] Whenever possible, physicians should initiate antidepressant therapy with the least impairing medication possible. However, the data indicating increased crash risk with the specific use of certain medications may reveal associations but not necessarily causation. It is difficult to know whether increased risk is associated with the drug, a drug-drug interaction, or the disease itself (e.g., depression, which may independently impair attention, judgment, etc).

Patients should be advised not to drive during the initial phase of antidepressant dosage adjustment(s) if they experience drowsiness, lightheadedness, or other side effects that may impair driving performance. Patients should also be advised that they might experience impairment in the absence of any subjective symptoms.

Bupropion

Side effects of bupropion (also known as Wellbutrin® and Zyban®) include anxiety, restlessness, weight loss, and insomnia (leading to daytime drowsiness). Patients should be counseled about these side effects and their potential to impair driving performance. Because bupropion may cause seizures at high doses, it should not be prescribed to patients with epilepsy, brain injuries, eating disorders, or other factors predisposing to seizure activity.

Mirtazapine

Mirtazapine (also known as Remeron®) is typically taken only at night due to its sedating effects. It has been shown to cause substantial impairment for many hours after dosing. If daytime sedation is noted as an adverse side effect, another antidepressant should be considered or driving discontinued.

281. Walgreens Health Services. Continuing Pharmacy Education Web Site. Medication-Related Impaired Driving: For Pharmacist. *https://webapp.walgreens.com/cePharmacy/programsHTML/transportation-tech.pdf*. Accessed November 16, 2007.

Monoamine oxidase (MAO) inhibitors	Side effects of MAO inhibitors that may impair driving performance include blurred vision, overstimulation, insomnia (leading to daytime drowsiness), orthostatic hypotension (with transient cognitive deficits), and hypertensive crisis (presenting with severe headaches and/or mental status changes). The latter can be caused by failure to adhere to dietary and medication restrictions. Patients should be counseled about these side effects and their potential to impair driving performance.
Selective serotonin reuptake inhibitors (SSRIs)	Common side effects of SSRIs that may impair driving performance include sleep changes (insomnia or sedation), headache, anxiety, and restlessness. While these side effects tend to be mild and well tolerated, physicians should counsel patients to be alert to their potential to affect driving performance. Special mention is made of serotonin syndrome, wherein mental status changes, autonomic hyperactivity, and neuromuscular side effects are observed due to excessive amounts of the drug or a drug-drug interaction. Treatment includes discontinuing the offending agent or hospitalization in severe cases.
Tricyclic antidepressants (TCAs)	Common side effects of TCAs that may impair driving performance include sedation, blurred vision, orthostatic hypotension, tremor, excitement, and heart palpitations. In studies involving healthy volunteers, the more sedating TCAs have been shown to impair psychomotor function, motor coordination, and open-road driving. Other studies appear to indicate an increased crash risk for drivers who take TCAs.[282] Whenever possible, other agents like SSRIs or TCA's with a low propensity for anticholinergic effects (nortryptiline or desipramine) should be considered for those who wish to continue driving. If nonimpairing alternatives are not available, then the physician should advise patients of the potential side effects, and recommend temporary driving cessation during the initial phase of medication initiation/dosage adjustment. Patients should also be advised that they might experience impairment even in the absence of subjective symptoms.
Antiemetics	Numerous classes of drugs—including anticholinergics, antihistamines, antipsychotics, cannabinoids, benzodiazepines, 5HT antagonists, and glucocorticoids—are used for their antiemetic effect. Side effects of antiemetics that may impair driving performance include sedation, blurred vision, headache, confusion, and dystonias. Significant impairment may be present even in the absence of subjective symptoms; this has been well documented for many benzodiazepines and over-the-counter antihistamines. Patients should be counseled about side effects and their potential to impair driving performance, and should be advised that they may experience impairment even in the absence of subjective symptoms. For more detailed information, see also Anticholinergics, Antihistamines, Antipsychotics, and Benzodiazepines in this section.

282. Ray, W. A., Purushottam, B. T., Shorr, R. I. (1993). Medications and the older driver. *Clin Geriatr Med.* 9(2):413–438.

Antihistamines

In many patients, the first generation antihistamines (such as diphenhydramine and chlorpheniramine) have pronounced CNS effects. In studies involving healthy volunteers, sedating antihistamines have been shown to impair psychomotor performance, simulated driving, and open-road driving.[283] Furthermore, subjects may experience impairment even in the absence of subjective symptoms of impairment.[284] In contrast, most nonsedating antihistamines do not produce these types of impairment after being taken in recommended doses.[285] Even nonsedating antihistamines may cause impairments if taken in higher-than-recommended doses, however, and one of them (i.e., cetirizine) may be slightly impairing to certain patients in normal doses.

Patients who take sedating antihistamines should be advised not to drive while on the medications. If these patients wish to continue driving, they should be prescribed a nonsedating antihistamine.

Antihypertensives

With their hypotensive properties, common side effects of antihypertensives that may impair driving performance include lightheadedness, dizziness, and fatigue. In addition, antihypertensives with a prominent CNS effect, including beta-blockers and the sympatholytic drugs clonidine, guanfacine and methyldopa, may cause sedation, confusion, insomnia, and nervousness.

Patients should be counseled about these side effects and their potential to impair driving performance. In addition, patients taking antihypertensives that may potentially cause electrolyte imbalance (i.e., diuretics) should be counseled about the symptoms of electrolyte imbalance and their potential to impair driving performance.

Antiparkinsonians

Several medications and classes of medications, including levodopa, antimuscarinics (anticholinergics), amantadine, and dopamine agonists, may be used in the treatment of Parkinson's disease symptoms. Common side effects of antiparkinsonian drugs that may impair driving performance include excessive daytime sleepiness, lightheadedness, dizziness, blurred vision, dyskinesias, on-off phenomenon, hallucinations, and confusion. (See also Anticholinergics in this section for more information.)

Patients should be counseled about these side effects and advised not to drive if they experience side effects. The physician may also consider referring patients for formal psychomotor testing or for on-road assessment performed by a driver rehabilitation specialist.

Antipsychotics

Most—if not all—antipsychotic medications have a strong potential to impair driving performance through various CNS effects. Some of the original or "classic" antipsychotics are heavily sedating, and all produce extrapyramidal side effects (EPS). Alhough the modern or "atypical" drugs have a lower tendency to cause EPS, they, too, are sedating.

283. Ibid.

284. Weiler, JM., et al. (2000). Effects of fexofenadine, diphenhydramine, and alcohol on driving performance. a randomized placebo-controlled trial in the Iowa Driving Simulator. *Ann Intern Med.* 132(5):354–363.

285. Ray, W. A., Purushottam, B. T., Shorr, R. I. (1993). Medications and the older friver. *Clin Geriatr Med.* 9(2):413–438.

Antipsychotics (continued)	Patients should be counseled about these side effects and advised not to drive if they experience side effects severe enough to impair driving performance. The physician should consider referring the patient for formal psychomotor testing or for on-road assessment performed by a driver rehabilitation specialist. If medication therapy is initiated while the patient is hospitalized, the impact of side effects on driving performance should be discussed prior to discharge.
Benzodiazepines and other sedatives / anxiolytics	Studies have demonstrated impairments in vision, attention, motor coordination, and driving performance with benzodiazepine use. Evening doses of long-acting benzodiazepines have been shown to markedly impair psychomotor function the following day, while comparable doses of short-acting compounds produce a lesser impairment.[286] In contrast, benzodiazepine-like hypnotics (such as zolpidem and zaleplon) have a more rapid rate of elimination. Studies of driving performance and psychomotor function have shown that five hours after taking zaleplon and nine hours after taking zolpidem at recommended doses, it is generally safe to drive again.41 Recently, reports in the news media and some studies indicate that zolpidem has not uncommonly been found during serum toxicology testing of drivers involved in fatal accidents or arrested for driving under the influence of drugs.[287] Patients should be prescribed evening doses of the shortest-acting hypnotics whenever possible. Patients who take longer-acting compounds or daytime doses of any hypnotic should be advised of the potential for impairment, even in the absence of subjective symptoms. These patients should also be advised to avoid driving, particularly during the initial phase of dosage adjustment(s).
Muscle relaxants	Most skeletal muscle relaxants (e.g., carisoprodol and cyclobenzaprine) have significant CNS effects. Patients should be counseled about these side effects, and should be advised not to drive during the initial phase of dosage adjustment(s) if they experience side effects severe enough to affect safe driving performance.
Nonsteroidal anti-inflammatory drugs (NSAIDs)	Isolated case reports of confusion following the use of the NSAIDs phenylbutazone and indomethacin suggest that they may rarely impair driving performance.[288] Recent data reveal an association with motor vehicle crashes, although this could represent the effects of the disease and not specifically treatment.[289] If the patient reports this side effect, the physician should consider adjusting the dosage or changing the medication.

286. Ibid.

287. Vermeeren, A., Danlou, P. E., O'Hanlon, J. F. (1999). Residual effects of aaleplon 10 and 20 mg on memory and actual driving performance following administration 5 and 2 hours before awakening. *Br J Clin Pharmacol*. 48:367–374.
Vermeeren, A., Muntjewerff, N. D., van Boxtel, M., et al. (2000). Residual effects of zaleplon and zopiclone versus the effects of alcohol on actual car driving performance. Eur Neuropsychopharmacol. 10(suppl 3):S394.
Volkerts, E. R., Verster, J. C., Heuckelem, J. H. G., et al. (2000). The impact on car-driving performance of zaleplon and zolpiden administration during the night. *Eur Neuropsychopharmacol*. 10(suppl 3):S395.

288. Jones, A. W., Holmgren, A., & Kugelberg, F. C. (2007). Concentrations of scheduled prescription drugs in blood of impaired drivers: considerations for interpreting the results. *Ther Drug Monitor*. 29:248–260.

289. Ray, W. A., Gurwitz, J., Decker, M. D., & Kennedy D. L. (1992). Medications and the safety of the older driver: is there a basis for concern? *Hum Factors*. 34(1):33–47.

Narcotic analgesics	Patients should be counseled about the impairing effects of narcotic analgesics (i.e., opioids) and the potential for impairment even in the absence of subjective symptoms. They should also be advised not to drive while on these medications. In addition, many narcotic analgesics have a high potential for abuse. However, the literature also indicates that physicians often undertreat pain in the general population and with older adults. Accordingly, physicians should always be alert to signs of abuse. (For more information, see the recommendations for substance abuse in Section 5.)
Stimulants	Common side effects of traditional stimulants (such as amphetamines and methylphenidate) that may impair driving performance include euphoria, overconfidence, nervousness, irritability, anxiety, insomnia, headache, and rebound effects as the stimulant wears off. Patients should be counseled about these side effects and advised not to drive during the initial phase of dosage adjustment(s) if they experience side effects severe enough to impair driving performance. (The novel stimulant, modafinil, is not euphorogenic, nor does it appear to cause rebound effects. However, its safety for use when driving has not yet been demonstrated.) In addition, many stimulants have a high potential for abuse. Accordingly, physicians should always be alert to signs of abuse. (For more information, see the recommendations for substance abuse in Section 5.5.)

CHAPTER 10

Moving Beyond This Guide: Future Plans to Meet the Transportation Needs of Older Adults

CHAPTER 10

Moving Beyond This Guide: Future Plans to Meet the Transportation Needs of Older Adults

The previous chapters provide physicians with recommendations and tools for enhancing the driving safety of their patients. As in other aspects of patient care, however, further research can lead to more effective care. We eagerly await further evaluation of in-office tools that can predict crash risk or determine fitness-to-drive, as well as improved access to driver assessment and rehabilitation. We also look forward to advanced technology in vehicles to assist drivers with navigation and safety issues. At the same time, we wish for safer roads, better transportation alternatives, increased crashworthiness of vehicles, and other vehicular improvements that can help keep our patients safe on the road as long as possible.

In this chapter, the AMA advocates for coordinated efforts among the medical and transportation communities, policymakers, community planners, the automobile industry, and government agencies to achieve the common goal of safe transportation for the older population. As this population continues to expand and live longer, we all have the challenge of keeping pace with its transportation needs.

Listed below is the AMA's checklist of research, initiatives, applications, and system changes that we believe are crucial for improving and increasing the safe mobility of the older population. We encourage readers of this guide to use this list as a launching pad to boost your future plans and efforts.

1. Improved physician tools for the assessment of driving safety

Physicians need an assessment tool that reliably identifies patients who are at increased risk for a car crash. This test battery must assess the primary functions that are related to driving, and must form a basis for medical interventions to correct any functional deficits that are identified. In addition, this tool must be brief, inexpensive, easy to administer, and validated to predict crash risk and/or the ability to pass a performance-based, standardized, reliable and valid road test.

At present, no comprehensive tool is available. Individual functional tests (such as the Trail Making Test, Part B; see Chapters 3 and 4) have been repeatedly shown to correlate with crash risk, yet there is still not a universal cut-off or score on these tests that can determine fitness-to-drive. Researchers are currently studying other tests in relation to driving. The field has focused on heterogeneous groups of older adults with modest correlations in functional batteries.[290] Further steps will likely require a focus on different batteries or tests in a given specific older population with a specific disease (e.g., glaucoma, dementia).

While researchers work toward achieving a comprehensive test battery, physicians can best evaluate their patients' driving safety by assessing the functions related to driving (see the Assessment of Driving Related Skills [ADReS] in Chapter 3) and reviewing the presence and/or severity of important medical illnesses (Chapter 9). The AMA will continue to promote awareness of the most recent assessment and rehabilitation tools, and we encourage physicians to stay informed on these developments.

2. Increased availability and affordability of driver rehabilitation

When the results of physician assessment are unclear, or when further correction of functional deficits through medical management is not possible, driver rehabilitation specialists (DRSs) are an excellent resource. DRSs can perform a focused clinical assessment, observe the patient in the actual driving task, and train him/her in the use of adaptive techniques or devices to compensate for functional deficits. (See Chapter 5 for more information.)

Unfortunately, access and cost remain major barriers to the utilization of DRSs by older drivers and their referring physicians. DRSs are not available in all communities, and there are presently too few to provide services to all older drivers who are in need of their services Furthermore, driver assessment and rehabilitation are expensive, and Medicare and private insurance companies rarely pay for these services.

290. Ball, K. K., Roenker, D. L., Wadley, V. G., et al. (2006). Can high-risk older drivers be identified through performance-based measures in a Department of Motor Vehicles setting? *J Am Geriatr Soc.* 54:77–84.

The American Occupational Therapy Association (AOTA) is addressing these issues through two initiatives. First, AOTA is devising a framework to increase the number of DRSs within the occupational therapy (OT) profession. This framework will include strategies to promote older driver practice among current OT practitioners, curriculum content for continuing education programs, and training modules for entry-level OT educational programs. Secondly, AOTA is actively lobbying for consistent Medicare coverage of OT-performed driver assessment and rehabilitation, under the assertions that these services fall under the scope of OT practice and that driving is an instrumental activity of daily living. Individual DRS programs have also pursued insurance coverage from Medicare and other providers, with varying degrees of success.

In the effort to keep older drivers on the road safely as long as is reasonable, increased access to and affordability of driver assessment and rehabilitation are essential. We support the AOTA's initiatives, and suggest that physicians use DRSs as a resource for their patients whenever possible. We also encourage research in this field to create standardized off-road and on-road tests that have respectable levels of reliability, validity, and test stability. Correlating results on road tests with prospective at-fault crash data remains an important area of future study. Finally, the added value of physicians referring their patients to an OT driving program, in comparison to "usual care," would be an important step in the process of obtaining Medicare and insurance company support for funding these types of evaluations.

3. Increased investigation into the use of simulators and comprehensive assessment methods techniques

Validated driver assessment technologies may help make driver assessment more widely available to older drivers. Preliminary research with a commercially available driving simulator has demonstrated a strong correlation between simulated driving performance and on-road performance in cognitively impaired and healthy older drivers.[291] Certainly, limitations exist with the use of simulators, such as lack of standardization in the field, use of different crash scenarios, expense, need for technological support, and simulator-induced sickness. However, unlike on-road assessment, simulators can evaluate performance in driving situations that would otherwise be infeasible or dangerous.[292] [293] In addition, there have been recent attempts to study their validity[294] and reliability.[295] Yet, a recent study was not able to correlate simulator findings with crash data in a cohort of sleep apnea patients, who have one of the highest crash rates associated with any medical conditions.[296] Further research and experience may confirm that driving simulators are safe, effective, and readily acceptable to the public. It will also be useful to discover if familiarity with computers and games by successive aging cohorts affects the outcome of simulator performance and/or reduces crashes.

We applaud recent efforts to further understand the complex role the central nervous system plays in operating a motor vehicle.[297, 298] We encourage State licensing authorities and driver rehabilitation programs to investigate the use of technologies to increase the availability of reliable driver assessment services to the public. Such technologies, if integrated into or aligned with current practices, could help form an intermediate step between physician assessment and driver rehabilitation or increase the licensing authority's capacity to offer specialized driver assessment to medically at-risk drivers.

4. The enhanced role of the driver licensing agency in promoting the safety of older drivers

As the agency that ultimately awards, renews, restricts and revokes the driver's license, each State's driver licensing agency has the task of distinguishing unsafe drivers from safe drivers. While each State has its own procedures, which are highly variable, potentially unsafe drivers are usually identified by one of four means: (1) failure of the individual to meet licensing or license renewal criteria; (2) report from the individual or family; (3) report from physicians, DRSs, law enforcement officers, and others; and (4) judicial report.

To meet the standards for licensing, the driver licensing agency initially requires individuals to pass assessments of knowledge, vision, and driving skills. License renewal tends to be less stringent, with many States permitting renewal by mail. In recent years, certain States have increased their efforts to identify older drivers who are at risk for unsafe driving by stipulating special renewal procedures for this population. These procedures include shortened renewal intervals, in-person renewal, and mandatory reassessment of knowledge, vision, and driving skills.

291. Freund, B., Gravenstein, S., Ferris, R. (2002). Evaluating driving performance of cognitively impaired and healthy older adults: a pilot study comparing on-road testing and driving simulation (letter to the editor). *J Am Geriatr Soc.* 50:1309.

292. Reimer, B., D'Ambrosio, L., Coughlin, J., et al. (2006). Using self-reported data to assess the validity of driving simulation data. *Behav Res Method.* 38(2):314–324.

293. Uc, E. Y., Rizzo, M. , Anderson, S. W., et al. (2006). Unsafe rear-end collision avoidance in Alzheimer's disease. *J Neurol Sci.* 251 (1–2):35–43.

294. Reimer, B., D'Ambrosio, L., Coughlin, J., et al. (2006). Using self-reported data to assess the validity of driving simulation data. *Behav Res Method.* 38(2):314–24.

295. Contardi, S., Pizza, F., Sancisi, E., et al. (2004). Reliability of a driving simulation task for evaluation of sleepiness. *Brain Res Bull.* 63(5):427-431.

296. Turkington, P. M., Sircar, M. , Allgar, V., & Elliott, M. W. (2001). Relationship between obstructive sleep apnoea, driving simulator performance, and risk of road traffic accidents. *Thorax.* 56(10):800–805.

297. Walter, H., Vetter, SC., Grothe, J., et al. (2001). The neural correlates of driving. *Neuroreport.* 12(8):1763–1767.

298. Ott, B. R., Heindel, W. C., Whelihan, W. M., et al. (2000). A single-photon emission computed tomography imaging study of driving impairment in patients with Alzheimer's disease. *Dement Geriatr Cogn Disord.* 11(3):153–160.

We encourage all States to maintain or adopt renewal procedures for the most effective identification of at-risk older drivers. (See also Enhanced role of the Medical Advisory Board below.) We also encourage States to base their standards for licensing on current scientific data. For example, visual acuity standards that are based on outdated research may be unnecessarily restrictive to all drivers and to older drivers in particular. As noted in Chapter 7, the only recent licensing renewal procedure that has been associated with decreased crash risk is the requirement for in-person renewal.

In addition to the vision screens that are currently in use, driver licensing agencies may also wish to utilize newer tools (such as contrast sensitivity and the useful field-of-view test) that have been shown to correlate with crash risk.[299, 300] Some of these tools, along with other tests of function and driving skills, are currently being field-tested by the California Department of Motor Vehicles as part of its three-tier assessment system.[301] Future findings from this system may be useful to some driver licensing agencies that are interested in establishing similar tier systems.

Many individuals are understandably reluctant to report themselves to the driver licensing agency as unsafe drivers. Although there are few data on this issue, recent research on referrals for fitness-to-drive in Missouri suggests that few if any drivers take this step.[302] Driver licensing agencies can do their part by creating a more supportive system for older drivers. For example, the agency can work more closely with the at-risk drivers' physicians or the Medical Advisory Board to correct functional deficits through medical treatment, if possible. Drivers with a high potential for rehabilitation can be referred by the licensing agency to a DRS to learn adaptive techniques and devices. Licensing agencies can also consider the patient's driving needs by issuing restricted licenses whenever possible to help the driver maintain mobility while protecting his/her safety. For those drivers who must relinquish their license, the agency can provide guidance in seeking alternative transportation.

At-risk drivers can also be brought to the attention of the driver licensing agency by physician referral. However, many physicians are not aware of their State's referral procedures,[303] and others fear legal liability for breach of confidentiality. With the advent of the Health Insurance Portability and Accountability Act (HIPAA), physicians may have questions about the extent and detail of patient information they should provide in a referral. Driver licensing agencies can encourage physician referral by establishing clear guidelines and simple procedures for referral (e.g., comprehensive referral forms that can be accessed over the Internet) and promoting physician awareness of these guidelines and referral procedures. In many States, physicians who refer patients to their State's driver licensing agency are not granted legal protection against liability for breaching the patient's confidentiality. Indeed, several States encourage or require physicians to report impaired drivers without specifically offering this legal protection. Physicians should join advocacy groups in their States to pass fair laws that protect physicians who report in good faith and ensure anonymity for reporting. State legislatures are encouraged to establish or maintain good-faith reporting laws that provide immunity from breach of confidentiality lawsuits for physicians and others who report impaired drivers to their State licensing authority.

5. Enhanced role of the Medical Advisory Board

A Medical Advisory Board (MAB) is generally composed of State-licensed physicians who work in conjunction with the driver licensing agency to determine whether mental or physical conditions may impair an individual's ability to drive safely. MABs vary among States in size, role, and level of involvement. For example, the MAB of the Maryland Motor Vehicle Administration reviews the fitness of individuals to drive safely, while California's MAB provides recommendations to DMV staff for use in developing policies that affect medically and functionally impaired drivers.[304] Many States lack an MAB altogether or have one that is ineffective.

We encourage each State driver licensing agency to enhance the role of its MAB in order to provide a greater capacity for assessment, rehabilitation and support to older drivers. We also encourage States that lack MABs to create a multi-disciplinary team of medical experts to develop and implement recommendations on the medical fitness of their State's licensed drivers. Such recommendations should be based on the most current scientific data, and should be implemented in an efficient review process.

Recently, the National Highway and Traffic Safety Administration and the American Association of Motor Vehicle Administrators (AAMVA) completed a study of each State's

299. Owsley C., Stalvey BT., Wells J., Sloane M. E., McGwin G. Visual risk factors for crash involvement in older drivers with cataract. *Arch Ophthalmol.* 119:881–887.

300. Owsley C., Ball K., McGwin G., Sloane M. E., Roenker DL., White M. F., Overley ET. Visual processing impairment and risk of motor vehicle crash among older adults. *JAMA.* 279(14):1083–1088.

301. Personal correspondence with Mary Janke, Ph.D., September 26, 2002; and Janke M. K., & Eberhard J. W. Assessing medically impaired older drivers in a licensing agency setting. *Accid Anal Prev.* 30(3):347–361.

302. Personal communication, Dr. Tom Meuser, Director of Aging, University Missouri St. Louis.

303. Cable, G., Reisner, M. , Gerges, S., & Thirumavalavan, V. (2000). Knowledge, attitudes, and practices of geriatricians regarding patients with dementia who are potentially dangerous automobile drivers: a national survey. *J Am Geriatr Soc.* 48(1):14–17.

304. Raleigh, R., & Janke, M. (2001). The role of the medical advisory board in DMVs: protecting the safety of older adult drivers. *Maximizing Human Potential: Newsletter of the Network on Environments, Services and Technologies for Maximizing Independence.* American Society on Aging 9(2):4–5.

MAB practices.[305] This project detailed the function of each State's MAB, its regulatory guidelines, and barriers to the implementation of screening, counseling, and referral activities. The executive summary of this study had many important recommendations for States that license medically impaired drivers, such as: each State should have an active board to set standards and guidelines and to be involved in fitness-to-drive evaluations; board members should be adequately compensated; immunity for physicians for reporting should be granted; and national standards and forms, and referrals for mobility counseling and/or DRSs, should be considered.

7. Increased public awareness of medication side effects that may impair driving performance

Many prescription and over-the-counter medications have the potential to impair driving performance. Despite warnings on the label and counseling by physicians and pharmacists, many patients are unaware of these risks.

To address this problem, the National Transportation Safety Board (NTSB) has recommended (in its Safety Recommendation I-00-5) that the U.S. Food and Drug Administration (FDA) establish a clear, consistent, and easily recognizable warning label for all prescription and over-the-counter medications that may interfere with the individual's ability to operate a vehicle. This recommendation was the focus of a FDA/NTSB joint public meeting held in November 2001. This meeting hosted presentations of epidemiological and controlled data on the effects of sedating drugs and crash risk, as well as presentations from innovators of devices that are designed to test the degree to which drugs may impair driving.

As a result of the meeting, the FDA and NTSB concluded that steps must be taken to better educate the public and prescribing physicians on the effects on driving of potentially sedating drugs. Only limited steps have been taken thus far, but we support efforts to increase patient and physician education and clarify labeling for consumers. One recent educational effort informs pharmacists about potentially driving-impairing drugs, and offers an extensive curriculum that reviews causes of crashes and the mechanisms whereby drugs may impair driving.[306] Physicians are encouraged to review this excellent resource, given the trend toward polypharmacy and the myriad problems associated with adverse drug events.

Currently, manufacturers of medications do not routinely test their products for effects on driving, nor are they required to do so. We support the identification and routine use of effective testing parameters to identify medications that may interfere with the ability to safely operate a motor vehicle. Similarly, such parameters could be utilized in the identification of medications that do not impair drivers when typically used as directed.

8. Promote self-awareness and appropriate self-regulation.

Our society relies on self-regulation at every level, including driving. Most drivers with adequate cognitive function and some modest assistance with compensatory behaviors and alternatives will choose to preserve safety. Some preliminary data from California indicate that drivers with greater impairment were actually safer drivers, perhaps because they had perceived the need to make adjustments and had successfully done so. More research must be done on appropriate self-regulation, and productive use must be made of results as a part of a comprehensive solution. A recent study suggests this may be a fruitful area that warrants additional investigation.[307]

9. Vehicle designs that optimize the safety of older drivers and their passengers

Age-related changes in vision, cognition, and motor ability may affect an individual's ability to enter/egress a motor vehicle with ease, access critical driver information, and handle a motor vehicle safely. Older persons are also less able to endure and recover from injuries sustained in an automobile crash. We encourage vehicle manufacturers to explore and implement enhancements in vehicle design that address and compensate for these physiological changes.

In particular, vehicle designs based on the anthropometric parameters of older persons—that is, their physical dimensions, strength, and range of motion—may be optimal for entry/egress; seating safety and comfort; seat belt/restraint systems; and placement and configuration of displays, mirrors and controls. Improvements in headlamp lighting to enhance nighttime visibility and reduce glare, as well as the use of high-contrast legible fonts and symbols for in-vehicle displays, may help compensate for age-related changes in vision.[308] In addition, prominent analog gauges may be easier to see and interpret than small digital devices.[309] Computers have revolutionized the motor vehicle industry by managing airbag safety systems, anti-lock brakes, and global positioning systems. In-vehicle assessment tools to assess for high-risk conditions may be developed in the future.

In the event of a crash, increasingly crashworthy vehicle designs and

305. Lococo, KH., & Staplin, L. (2005). Strategies for Medical Advisory Boards and Licensing Review. DOT HS 809 874. Washington, DC: National Highway Traffic Safety Administration. *www.nhtsa.dot.gov/people/injury/research/MedicalAdvisory/pages/Executive.html.* Accessed November 14, 2007.

306. Lococo, K., et al. Pharmacist Curriculum Drugs and Driving . *https://webapp.walgreens.com/cePharmacy/programsHTML/transportation-tech.pdf.* Accessed November 12, 2007.

307. Bedard, M. , Porter, M. M., Marshall, S., et al. (2008). The combination of two training approaches to improve older driver safety *Traff Inj Prev*. 9:70–76.

308. Schieber, F. (1994). High-priority research and development needs for maintaining the safety and mobility of older drivers. *Exp Aging Res*. 20:35–43.

309. Koonce, JM., Gold, M. , & Moroze, M. (1986). Comparison of novice and experienced pilots using analog and digital flight displays. *Aviat Space Environ Med*. 57(12 pt. 1):1181–1184.

restraint systems designed for fragile occupants may enhance the safety of older drivers and passengers. Furthermore, certain add-on features may make current vehicle designs safer and more accessible for older drivers. For example, handholds and supports on door frames may facilitate entry/egress for drivers and their passengers. Padded steering wheels and seat adjuster handles (rather than knobs) may benefit drivers with decreased hand grip, while adjustable steering wheels and foot pedals may aid drivers with limited range of motion.[310] Other adjustable controls and displays may allow older drivers to tailor their vehicle to their changing abilities and needs. New safety features with the potential to prevent injury in older adults include: tire pressure monitoring systems, adaptive cruise control/collision mitigation systems, blind spot detection/collision warning, lane departure warnings, rollover prevention, occupant-sensitive airbags, emergency brake assist, rearview cameras, and on-demand emergency response systems (e.g., OnStar).[311]

10. Optimal environments for older drivers and pedestrians

Many older road users are at a disadvantage on roads and highways that are most heavily used by and traditionally designed for a younger population. In a telephone survey of 2,422 people 50 and older, nearly one of five participants considered inconsiderate drivers to be a significant problem. Other commonly identified problems included traffic congestion, crime, and fast traffic.[312]

These problems may be ameliorated through traffic law enforcement and better road and traffic control designs.

One of the top requests of the nearly 200 Iowans (older drivers, transportation professionals, and senior-related professionals) attending the Iowa Older Drivers Forum was the enhanced enforcement of speed and aggressive driving laws.[313] In terms of road and traffic engineering, the Federal Highway Administration (FHWA) has recognized and addressed the needs of older road users in its Highway Design Handbook for Older Drivers and Pedestrians, a supplement to existing standards and guidelines in the areas of highway geometry, operations, and traffic control devices.[314] These design features may be implemented in new construction, renovation and maintenance of existing structures, and "spot" treatment at certain locations where safety problems exist or are anticipated.[315] Recent positive news is a trend or reduction in highway deaths for the first time since 1992, which in part has been attributed to installation of median guard cable on busy highways, building better roads, and the addition of rumble strips to the shoulders of roads.[316] The FHWA handbook will soon be updated to incorporate the latest research on the effectiveness of design and engineering enhancement to accommodate older road users.

11. Better alternatives to driving

For the older population, alternatives to driving are often less than ideal or nonexistent. When faced with the choice of driving unsafely or losing mobility, many risk their safety by continuing to drive.

Existing forms of transportation clearly need to be optimized for use by older persons. In a telephone survey of 2,422 people 50 and older, ride-sharing was the second most common mode of transportation (after driving); however, nearly a quarter of the survey participants cited feelings of dependency and concerns about imposing as a barrier to use. Public transportation was the usual mode of transportation for fewer than 5 percent of survey participants, with many citing unavailable destinations, problems with accessibility, and fear of crime as barriers to use. Fewer than 5 percent used taxis as their usual mode of transportation due to their high cost.[317] Until these barriers are addressed, these forms of transportation will remain inaccessible to many older persons.

Transportation programs created specifically for the older population, such as senior shuttles and vans, exist in certain communities. Certain States have adopted the independent transportation network (ITN) model developed by Dr. Katherine Freund initially in Maine.[318] These programs address the Five A's of Senior-Friendly Transportation; namely, availability, accessibility, acceptability, affordability, and adaptability (see Figure).[319] As the older population continues to grow, we encourage the creation of new programs or the expansion of existing ones to keep pace with passengers' needs. We also encourage stronger community outreach to increase awareness of such programs.

310. Ageing and Transport: Mobility Needs and Safety Issues. (2001). Organisation for Economic Co-Operation and Development; p. 69–71.

311. Edmunds.Com. Top 10 High-Tech Car Safety Technologies; 2007. *www.edmunds.com/reviews/list/top10/114984/article.html.* Accessed November 15, 2007.

312. Ritter, AS., Straight, A., & Evans, E. (2002). Understanding Senior Transportation: Report and Analysis of a Survey of Consumers Age 50+. American Association for Retired Persons.

313. Iowa Safety Management System: Safe Mobility Decisions for Older Drivers Forum. June 19-20, 2002.

314. Staplin, L., Lococo, K., Byington, S., Harkey, D. (2001, October). Highway Design Handbook for Older Drivers and Pedestrians. FHWA-RD-01-103. Washington, DC: Federal Highway Administration.

315. Ageing and Transport: Mobility Needs and Safety Issues. (2001). Organisation for Economic Co-Operation and Development; p. 60.

316. Tom Warne Report. (2007). Missouri Highway Deaths Decline. *http://tomwarnereport.com/twr/twr_v4n28.html.* Accessed November 15, 2007.

317. Ritter, AS., Straight, A., & Evans, E. (2002). Understanding Senior Transportation: Report and Analysis of a Survey of Consumers Age 50+. American Association for Retired Persons; Policy and Strategy Group, Public Policy Institute.

318. ITN America. (2007). *www.itnamerica.org.* Accessed November 12, 2007.

319. Supplemental Transportation Programs for Seniors. (2001, June). By the Beverly Foundation, prepared for AAA Foundation for Traffic Safety.

Figure 10.1
The Five A's of Senior-Friendly Transportation

(Reproduced from *Supplemental Transportation Programs for Seniors*, The Beverly Foundation)

Availability: Transportation exists and is available when needed (e.g., evenings, weekdays, weekends)

Accessibility: Transportation can be reached and used (e.g., bus stairs are negotiable, seats are high enough, vehicle comes to the door, transit stops are reachable)

Acceptability: Deals with standards including cleanliness and safety (e.g., the transporting vehicle is clean, transit stops are in safe areas, drivers are courteous and helpful)

Affordability: Deals with costs (e.g., fees are affordable, vouchers or coupons are available to defray out-of-pocket expenses)

Adaptability: Transportation can be modified or adjusted to meet special needs (e.g., the vehicle can accommodate a wheelchair, trip chaining is possible, escorts can be provided)

12. Education and training tools

Additional resources

The following resources contain additional information on meeting the mobility needs of the older population:

Ritter, A. S., Straight, A., and Evans, E. *Understanding Senior Transportation: Report and Analysis of a Survey of Consumers Age 50+*. AARP, Policy and Strategy Group, Public Policy Institute, 2002. This paper was created to explore the problems of people 50 and older, in particular, those 75and older with relation to transportation. May be used in the development of policies that expand and improve transportation options for older persons.

Staplin, L., Lococo, K., Byington, S., and Harkey, D. *Highway Design Handbook for Older Drivers and Pedestrians*. FHWA-RD-01-103, October 2001. This applications-oriented handbook provides detailed design recommendations for five types of sites: (1) intersections (at grade); (2) interchanges (grade separation); (3) roadway curvature and passing zones; (4) construction/work zones; and (5) highway-rail grade crossings. This handbook is primarily intended for highway designers, traffic engineers, and highway safety specialists involved in the design and operation of highway facilities. It may also be of interest to researchers concerned with issues of older road user safety and mobility.

Ageing and Transport: Mobility Needs and Safety Issues. Organisation for Economic Co-Operation and Development (OECD), 2001. The OECD, an international organization dedicated to addressing the economic, social, and governance challenges of a globalized economy, produced this investigation of the travel patterns, transport and safety needs, and mobility implications of tomorrow's elderly. It is intended to inform strategists, policy-makers, regulators, and the general public of the aging population's safety and mobility needs; dispel myths and misconceptions about older road users; and present the latest research findings to assist decision-makers in formulating sound policies and programs for the safe mobility of the aging population.

Supplemental Transportation Programs for Seniors. By the Beverly Foundation, prepared for AAA Foundation for Traffic Safety, June 2001. This report contains the findings of the Supplemental Transportation Program for Seniors project, which was initiated in 2000 by the AAA Foundation for Traffic Safety, a philanthropic foundation in Washington, DC, and the Beverly Foundation, a private foundation in Pasadena, California. This project was designed as a nine-month effort to gather information about community-based transportation programs for seniors in the United States. In describing and evaluating these programs in order to provide their findings to interested organizations, the project staff recognized the importance of five criteria for senior-friendly transportation, which are listed.

Lococo , K., Tyree, R. *Medication-Related Impaired Driving*. By NHTSA and co-sponsored by Walgreens, 2007. By NHTSA and co-sponsored by Walgreens, this excellent review of potential driving-impairing drugs provides credits or CEUs for pharmacy technicians. However, this curriculum is useful reading for any clinician who prescribes drugs to older adults. The manual covers causes of motor vehicle crashes, reviews functional abilities that are key for operating a motor vehicle, and lists reasons why medications may impair driving. There is a discussion of the term "potentially impairing medications" and an updated review of the literature that identifies high risk drugs. Ethical and legal issues in drug prescribing are addressed. Although the curriculum was created for pharmacists, much of the information is helpful to physicians.

Lococo, K., Staplin, L. *Strategies for Medical Advisory Boards and Licensing Review*. DOT HS 809 874 , *July 2005*. This NHTSA-funded project, written by Lococo and Staplin, reviews the current operations and practices of MABs. A summary of what each State is currently doing in this area is provided.

An executive summary is especially useful in outlining the direction States and MABs should pursue in order to enhance their usefulness and viability, and have an impact on public safety.

Maintaining Safe Mobility in an Aging Society. The overarching objective of this book is to provide a concise, comprehensive, and up-to-date resource on aging and transportation. Specifically, it has the following goals: Enable readers to understand the issues related to aging and mobility and to respond to the often heard comment "Just take their driver license away"; describe the skills related to safe driving and how they can be affected by aging; critically examine the current evidence on how medical conditions and medications affect driving skills; provide a comprehensive description of screening and assessment practices, issues, and tools; provide information to help older adults transition from full driving to driving cessation; and explore various means by which an aging individual can maintain safe mobility. (Eby, D.W., Molnar, L.J., & Kartje, P.S.. Maintaining Safe Mobility in an Aging Society. New York, NY: CRC Press. ISBN: 9781420064537. In press.)

APPENDIX A

CPT® Codes

APPENDIX A

CPT® codes

The following Current Procedural Terminology (CPT®) codes can be used for driver assessment and counseling, when applicable. These codes were taken from *Current Procedural Terminology* (*CPT®*). 4th ed., Professional ed. Chicago, IL: American Medical Association; 2009.

When selecting the appropriate CPT® codes for driver assessment and counseling, first determine the primary reason for your patient's office visit, as you would normally. The services described in this Guide will most often fall under Evaluation and Management (E/M) services. Next, select the appropriate E/M category/subcategory. If you choose to apply codes from the Preventive Medicine Services category, consult Table 1 for the appropriate codes. If any additional services are provided over and above the E/M services, codes from Table 2 may be additionally reported.

Table 1: Evaluation and Management—Preventive Medicine Services

If the primary reason for your patient's visit falls under the E/M category of Preventive Medicine Services, choose one of the following codes:

99386 **99387**	40-64 years 65 years and older	**New Patient, Initial Comprehensive Preventive Medicine** Evaluation and management of an individual including an age and gender appropriate history, examination, counseling/anticipatory guidance/risk factor reduction interventions, and the ordering of appropriate immunizations(s), laboratory/diagnostic procedures. *These codes can be used for a complete Preventive Medicine history and physical exam for a new patient (or one who has not been seen in three or more years), which may include assessment and counseling on driver safety. If significant driver assessment and counseling take place during the office visit, Modifier-25 may be added to the codes above.*
99396 **99397**	40-64 years 65 years and older	**Established Patient, Periodic Comprehensive Preventive Medicine** Reevaluation and management of an individual including an age and gender appropriate history, examination, counseling/anticipatory guidance/risk factor reduction interventions, and the ordering of appropriate immunization(s), laboratory/diagnostic procedures. *Codes from the Preventative Medicine Services 99386-99387 and 99396-99397 can only be reported once per year. If driver assessment and counseling take place during the office visit, Modifier-25 may be added to the codes above.*

Modifier-25 is appended to the office/outpatient service code to indicate that a significant, separately identifiable E/M service was provided by the same physician on the same day as the preventive medicine service.

99401 **99402** **99403** **99404**	Approximately 15 minutes Approximately 30 minutes Approximately 45 minutes Approximately 60 minutes	**Counseling and/or Risk Factor Reduction Intervention** Preventive medicine counseling and risk factor reduction interventions provided as a separate encounter will vary with age and should address such issues as family problems, diet and exercise, substance abuse, sexual practices, injury prevention, dental health, and diagnostic and laboratory test results available at the time of the encounter. (These codes are not to be used to report counseling and risk factor reduction interventions provided to patients with symptoms or established illness.) *These are time-based codes, to be reported based upon the amount of time spent counseling the patient. Driver safety or driving retirement counseling fall under the category of injury prevention. Please note that for driving retirement counseling, a copy of the follow-up letter to your patient can be included in the patient's chart as additional documentation. A sample letter can be found in Chapter 6.*

Table 2: Additional codes

The codes below can be used for administration of ADReS (see Chapter 3). If you complete the entire assessment, you can include codes 99420, 95831 and either 99172 or 99173. The ADReS Score Sheet can serve as the report.

99420	**Administration and Interpretation of Health Risk Assessment Instrument**
95831	**Muscle and Range of Motion Testing** Muscle testing, manual (separate procedure)with report; extremity (excluding hand)or trunk.
99172	**Visual Function Screening** Automated or semi-automated bilateral quantitative determination of visual acuity, ocular alignment, color vision by pseudoisochromatic plates, and field of vision (may include all or some screening of the determination(s) for contrast sensitivity, vision under glare).
99173	**Screening Test of Visual Acuity, quantitative, bilateral** The screening used must employ graduated visual acuity stimuli that allow a quantitative estimate of visual acuity (e.g., Snellen chart).
New CPT® codes for the Revised Physician's Guide:	
99406	Smoking and tobacco use cessation counseling visit; intermediate, greater than 3 minutes up to 10 minutes
99407	Smoking and tobacco use cessation counseling visit; intensive, greater than 10 minutes
99408	Alcohol and/or substance (other than tobacco) abuse structured screening (eg, AUDIT, DAST), and brief intervention (SBI) services; 15 to 30 minutes
99409	Alcohol and/or substance (other than tobacco) abuse structured screening (eg, AUDIT, DAST), and brief intervention (SBI) services; greater than 30 minutes

APPENDIX B

Patient and Caregiver Educational Materials

APPENDIX B

Patient and Caregiver Educational Materials

These handouts were designed to be user-friendly and simple to read. All patient education materials were written at or below a 6th grade reading level, and all family and caregiver material was written at a 7th grade reading level.

We encourage physicians to make copies of these handouts for their patients, have them available in the office setting, educate office staff to distribute them when appropriate, and use them as talking points when discussing driving issues with patients.

Am I a Safe Driver?

Check the box if the statement applies to you.

- ☐ I get lost while driving.
- ☐ My friends or family members say they are worried about my driving.
- ☐ Other cars seem to appear from nowhere.
- ☐ I have trouble finding and reading signs in time to respond to them.
- ☐ Other drivers drive too fast.
- ☐ Other drivers often honk at me.
- ☐ Driving stresses me out.
- ☐ After driving, I feel tired.
- ☐ I feel sleepy when I drive.
- ☐ I have had more "near-misses" lately.
- ☐ Busy intersections bother me.
- ☐ Left-hand turns make me nervous.
- ☐ The glare from oncoming headlights bothers me.
- ☐ My medication makes me dizzy or drowsy.
- ☐ I have trouble turning the steering wheel.
- ☐ I have trouble pushing down the foot pedal.
- ☐ I have trouble looking over my shoulder when I back up.
- ☐ I have been stopped by the police for my driving.
- ☐ People no longer will accept rides from me.
- ☐ I have difficulty backing up.
- ☐ I have had accidents that were my fault in the past year.
- ☐ I am too cautious when driving.
- ☐ I sometimes forget to use my mirrors or signals.
- ☐ I sometimes forget to check for oncoming traffic.
- ☐ I have more trouble parking lately.

If you have checked any of the boxes, your safety may be at risk when you drive.

Talk to your doctor about ways to improve your safety when you drive.

Successful Aging Tips

Tip #1: Take care of your health.

Visit your doctor regularly.

Ask about tests and immunizations that are right for your age group.

Consider testing for cancer that is right for your age group.

Treat any risk factors for atherosclerosis or "hardening of the arteries."

Eat a healthy diet. Your diet should be low in fat and high in fiber.

- Eat plenty of vegetables, fruits, beans and whole grains.
- Eat low fat proteins in the form of lean red meat, poultry and fish.
- Get enough calcium by drinking low fat milk and eating low fat yogurt and cheese.
- Eat a variety of foods to get enough vitamins and minerals in your diet.
- Drink lots of water.

Exercise to stay fit. Be active every day at your own level of comfort.

- Walk, dance, or swim to improve your endurance.
- Work out with weights to increase your strength.
- Stretch to maintain your flexibility or consider joining group classes that will help you stay fit (e.g., yoga, tai chi).

Don't drink too much alcohol. It is recommended that people over the age of 65, not have more than one drink per day. (A drink is one glass of wine, one bottle of beer, or one shot of hard liquor.) Never drink alcohol with your medicines!

Don't use tobacco in any form. This means cigarettes, cigars, pipes, chew or snuff. If you need help quitting, talk to your doctor.

Tip #2: Keep yourself safe.

Make your home a safe place.

- Keep your home, walkways and stairways well lit and uncluttered.
- Keep working smoke detectors and a fire extinguisher in your home.
- Adjust the thermostat on your hot water tank so that you don't burn yourself.
- Remove firearms from the house.

Prevent falls.

- Make sure all throw rugs have non-slip backs so they don't throw you!
- Slip-proof your bathtub with a rubber mat.
- Consider grab bars and a shower chair for the bathtub.
- Consider a raised toilet seat.
- Consider an occupational therapy home safety evaluation.

Stay safe in the car.

- Wear your seat belt—and wear it correctly! (It should go over your shoulder and across your lap.)
- Never drink and drive!
- Don't drive when you are angry, upset, sleepy or ill.
- If you have concerns about your driving safety, talk to your doctor.
- Do not use a cell phone while driving.
- Do not do other activities such as eating, reading, and shaving when driving.

(over)

Tip #3: Take care of your emotional health.

Keep in touch with family and friends. It's important to maintain your social life!

Exercise your mind. Keep your mind active by reading books, doing crossword puzzles, and learning about computers.

Stay active by joining groups and keeping your mind alert.

- Consider doing crosswords, puzzles, computer games, card games, etc.
- Join a club, organization, or religious group and participate in volunteer activities.
- Consider volunteering to drive an older adult who no longer has a license!

Keep a positive attitude!
Remember to smile and laugh.

- Focus on the good things in your life, and don't dwell on the bad.
- Stay active with the activities that make you happy.
- If you've been feeling sad lately or no longer enjoy the things you used to, ask your doctor for assistance.

Tip #4: Plan for your future.

Keep track of your money. Even if someone else is helping you manage your bank accounts and investments, stay informed.

Know your own health. This is important for receiving good medical care.

- Know what medical conditions you have.
- Know the names of your medicines and how often you take them.
- If you are having trouble remembering taking your medication, use a pillbox, calendar, or family member to help you stay on track.
- Make a list of your medical conditions, medicines, drug allergies (if any), and the names of your doctors. Keep this list in your wallet.

Make your health care wishes known to your family and doctors.

- Consider filling out an advance directives form. This form lets you state your health care choices or name someone to make these choices for you in case you are unable to do so.
- Give your family and doctors a copy of the advanced directives form. This way, they have a written record of your choices in case you are unable to tell them at the time.
- If you need help with your advance directives, talk to your doctor or your lawyer.

Create a transportation plan. If you don't drive, know how to get around.

- Ask family and friends if they would be willing to give you a ride.
- Find out about buses, trains, and shuttles in your area.
- If you need help finding a ride, contact your local Area Agency on Aging.

Tips for Safe Driving

Tip #1: Drive with care.

Always—

- Plan your trips ahead of time. Decide what time to leave and which roads to take. Try to avoid heavy traffic, poor weather and high-speed areas.
- Wear your seat belt—and wear it correctly. (It should go over your shoulder and across your lap.)
- Be sure you "fit" well in your car. Take advantage of a CarFit class (see resources) if one is available in your community.
- Drive at the speed limit. It's unsafe to drive too fast or too slow.
- Be alert—pay attention to traffic at all times.
- Keep enough distance between you and the car in front of you.
- Be extra careful at intersections. Use your turn signals and remember to look around you for people and other cars.
- Check your blind spot when changing lanes or backing up.
- Be extremely careful with left hand turns, allowing enough time to pass through the intersection in case of on-coming traffic.
- Be extra careful at train tracks. Remember to look both ways for trains.
- When you take a new medicine, ask your doctor or pharmacist about side effects. Many medicines may affect your driving even when you feel fine. If your medicine makes you dizzy or drowsy, talk to your doctor to find out ways to take your medicine so it doesn't affect your driving.

Never—

- Never drink and drive.
- Never drive when you feel angry or tired. If you start to feel tired, stop your car somewhere safe. Take a break until you feel more alert.
- Never drive if your medication is making you sleepy.
- Never use a cell phone when driving.
- Never eat, drink or do other activities while driving.
- Never drive in icy or snowy weather.

If—

- If you don't see well in the dark, try not to drive at night or during storms.
- If you have trouble making left turns at an intersection, make three right turns instead of one left turn.
- If you can, avoid driving in bad weather such as rain, sleet or snow.
- If a certain route always causes you stress, try to find an alternate route.
- If someone in the car is bothering you (e.g., noisy grandchildren) tell him or her to stop.

(over)

Tip #2: Take care of your car.

- Make sure you have enough gas in your car.
- Make sure your tires have the right amount of air and check them each month for any wear or damage.
- Get your car tuned up regularly.
- Keep your windshields and mirrors clean.
- Keep a cloth in your car for cleaning windows.
- Replace your windshield wiper blades when they get worn out.
- Consider using Rain-X or a similar product to keep your windows clear.
- If you are shopping for a new car, look for a car with power steering and automatic transmission.
- If you own a computer you can check to see how well a car will do if it is involved in a crash. This information is on the following Web site of the National Highway Traffic Safety Administration: *www.safercar.gov*. You might want to consider buying a car that has the highest rating when struck by another vehicle from the front or side.

Tip # 3: Know where you can find a ride.

How do you get around when your car is in the shop? If you don't know the answer to this question, it's time for you to put together a "transportation plan."

A transportation plan is a list of all the ways that you can get around. Use this list when your car is in the shop or when you don't feel safe driving. Your transportation plan might include:

- Rides from friends and family
- Taxi
- Bus or train
- Senior shuttle
- Volunteer drivers from your local community or government center.

If you need help creating a transportation plan, your doctor can get you started.

Tip #4: Take a driver safety class.

To learn how to drive more safely, try taking a class. In a driver safety class, the instructor teaches you skills that you can use when you are driving. To find a class near you, call one of the following programs:

AAA Foundation for Traffic Safety
Safe Driving for Mature Operators (course)
www.seniordrivers.org/driving/driving.cfm?button=publication&selection=MO

AARP Driving Safety Program
The classic course with information on how to locate an educational venue in your community.
www.aarp.org/families/driver_safety/wrapper_driver.py

Driving School Association of the Americas, Inc.
1-800-270-3722

These classes usually last several hours. These classes do not cost much money—some are even free. As an added bonus, you might receive a discount on your car insurance after taking one of these classes. Talk to your insurance agent and company to determine if they offer a discount.

How to Assist the Older Driver

As experienced drivers age, changes in vision, reaction time, and /or medical conditions may cause them to drive less safely. Sometimes these changes happen so slowly that drivers may not even be aware that their skills have declined.

If you have concerns about someone's driving safety, here's what you can do to keep your older driver safe AND mobile.

Is your loved one a safe driver?

If you have the chance, go for a ride with this driver. Look for the following warning signs in his/her driving:

- Forgets to buckle up (use seat belts)
- Does not obey stop signs or red traffic lights
- Fails to yield right of way
- Drives too slowly or quickly
- Often gets lost, even on familiar routes
- Stops at a green light or at the wrong time
- Doesn't seem to notice other cars, walkers, or bike riders on the road
- Doesn't stay in the lane
- Gets honked at or passed often
- Reacts slowly to driving situations
- Makes poor driving decisions
- Fails to use mirrors, check for blind spots, use turn signals
- Mixes up gas and brake pedal or no longer can use them smoothly
- Too cautious or too aggressive when driving

Other signs of unsafe driving:

- Recent near misses or fender benders
- Recent tickets for moving violations
- Repeated comments from those riding with your driver or watching them in traffic about close calls, near misses, or the driver not seeing other vehicles.
- Accidents, especially those that were the driver's fault.
- Recent increase in the car insurance premium

Riding with or following your driver, every once in a while, is one way to keep track of your loved one's driving. Another way is by talking to the spouse or friends of the driver you are concerned about.

If you are concerned about your loved one's driving, what can you do?

Talk to your loved one. Say that you are concerned about his/her driving safety. Ask if he or she shares your concern.

- Don't bring up your concerns while driving. It's dangerous to distract the driver! Wait until he or she is calm and you have the driver's full attention.
- Explain why you are concerned. Give specific reasons—for example, a medical condition like poor vision, recent fender benders, getting lost, or running stop signs.
- Realize that your loved one may become negative or defensive. After all, driving is important for independence and self-esteem.

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- If the person you are concerned about does not want to talk about driving at that time, bring it up again later. Your continued concern and support may help your loved one feel more comfortable with this topic.
- Be a good listener. Take your loved one's concerns seriously.
- Consider using a handout like the Hartford's "We Need to Talk" which can be accessed at the following website; *www.thehartford.com/talkwitholderdrivers/brochure/brochure.htm* or writing the Hartford and requesting brochures at;
  The Hartford
  We Need to Talk
  200 Executive Boulevard
  Southington, CT 06489

Help make plans for transportation. When your loved one is ready to talk about his/her driving safety, you can work together to create plans for future safety.

- Make a formal agreement about driving. In this agreement, your loved one chooses a person to tell him/her when it is no longer safe to drive. This individual then agrees to help your loved one make the transition to driving retirement. (You can find a sample agreement in At the Crossroads: A Guide to Alzheimer's Disease, Dementia & Driving. Order a free copy by writing to At the Crossroads booklet, The Hartford, 200 Executive Boulevard, Southington, CT, 06489.)
- Help create a transportation plan. Your loved one may rely less on driving if he/she has other ways to get around. Starting to use other ways to travel even before the person stops driving may make the change easier in the future.

Encourage a visit to the doctor. The doctor can examine a person's medical history, medication regimen, and current health to see if any of these may be affecting his/her driving safety. If so, the doctor can provide treatment to help improve medical conditions and possibly driving safety.

Encourage your loved one to take a driving test. A driver rehabilitation specialist (DRS) can assess a person's driving safety through an office exam and driving test. The DRS can also teach special techniques or provide special equipment to help a person drive more safely. (To find a DRS in your area, ask your doctor for a referral or contact the Association for Driver Rehabilitation Specialists (ADED*):

The Association for Driver Rehabilitation Specialists (ADED*)
Information on the Association.
www.aded.net/i4a/pages/index.cfm?pageid=1
Also provides a locating tool for finding a DRS near you.
www.aded.net/custom/directory/?pageid=209&showTitle=1

If a DRS is not available in your area, contact a local driving school or your State's Department of Motor Vehicles to see if they can do a driving test.

* The acronym ADED was retained when the association changed its name from the Association of Driver Educators for the Disabled to its current name.

How to help when your loved one needs to stop driving.

At some point, your loved one may need to stop driving for his/her own safety and the safety of others. You and your family members may come to this decision yourselves, or at the recommendation of the doctor, a driver rehabilitation specialist, driving instructor, or the Department of Motor Vehicles. When someone close to you retires from driving, there are several things you can do to make this easier for him/her:

- Help create a transportation plan. It may be easier for someone to give up driving if they are aware of other ways to get around. Help them create a list of "tried-and-true" ride options. This list can include:
- The names and phone numbers of friends and relatives who are willing to give rides, with the days and times they are available. You should even consider writing in specific duties, dates, and times, with the places your loved one needs to go and the name of the driver on a calendar to make this a reality.
- The phone number of a local cab company.
- Which bus or train to take to get to a specific destination. Try riding with your loved one the first time to make him/her feel comfortable. (This may not be possible for many people with physical weakness or arthritis and certainly could not be done for those with memory or thinking problems.)
- The phone number for a shuttle service. Call your community center and regional transit authority to see if they offer a door-to-door shuttle service for older passengers.
- The names and phone numbers of volunteer drivers. Call your community center, church, or synagogue to see if they have a volunteer driver program.
- If you need help finding other ride options, contact your local Area Agency on Aging.

Local Agency on Aging
Assists in finding resources for the aging in your community.
www.eldercare.gov

If your loved one can't go shopping, help him/her shop from home. Arrange for medicines and groceries to be delivered. Explore online ordering or subscribe to catalogs and "go shopping" at home. Locate which services make house calls—local hairdressers or barbers may be able to stop by for a home visit.

Encourage social activities. Visits with friends, time spent at the senior center, and volunteer work are important for health and well-being. When creating a transportation plan, don't forget to include rides to social activities. It's especially important to maintain social contacts and keep spirits up during this time of adjustment.

Be there for your loved one. Let the person you care for know that he or she has your support. Offer assistance willingly and be a good listener. This may be an emotionally difficult time, and it's important to show that you care. You may need to find additional family members or friends to help with this discussion.

Getting By Without Driving

Who doesn't drive?

If you live long enough, you will eventually have to stop driving. The average male will have seven years without the ability to drive, and the average female ten years! Many people choose to stop driving because of the hassle and expense of auto insurance, car maintenance, and gasoline. Other people stop driving because they feel unsafe on the road. And some people have never learned to drive!

If you don't drive, you're in good company. Although most Americans use their cars to get around, many people get by just fine without one. In this sheet, we suggest ways to get by without driving.

Where can you find a ride?

Here are some ways to get a ride. See which ones work best for you.

- **Ask for a friend or relative for a ride.** Offer to pay for the gasoline.
- **Take public transportation.** Can a train, subway or bus take you where you need to go? Call your regional transit authority and ask for directions.
- **Take a taxi cab.** To cut down costs, try sharing a cab with friends or find out if your community offers discounted fares for seniors.
- **Ride a senior transit shuttle.** Call your community center or local Area Agency on Aging to see if your neighborhood has a shuttle service.
- **Ask about volunteer drivers.** Call your community center, church or synagogue to see if they have a volunteer driver program.
- **Ride a Medi-car.** If you need a ride to your doctor's office, call your local Area Agency on Aging to see if a Medi-car can get you there.

If you can't go out to get something, have it come to you.

Many stores can deliver their products straight to your door.

- **Have your groceries delivered.** Many stores deliver for free or for a low fee. You can even call your family and friends, or volunteers from your local community center, church or synagogue to see if someone can pick up your groceries
- **Order your medicines by mail.** Not only is this more convenient—it's often less expensive, too. Order only from pharmacies that you know and trust. Some pharmacists will also deliver medications to the home.
- **Have your meals delivered to you.** Many restaurants will deliver meals for free or for a low fee. Also, you may be eligible for Meals-on-Wheels, a program that delivers hot meals at low cost. Call your local Area Agency on Aging for more information about Meals-on-Wheels.
- **Shop from catalogs.** You can buy almost anything you need from catalogs: clothing, pet food, toiletries, gifts, and more! Many catalogs are now on-line, with the most recent selections available from Internet Web sites.

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Who can tell me more about services in my area?

The following agencies can provide you with information to get you started:

Area Agency on Aging (AAA) Eldercare Locator
www.eldercare.gov
800-677-1116 weekdays
Call this toll-free number and ask for the phone number of your local Area Agency on Aging (AAA). Your local AAA can tell you more about ride options, Meals-on-Wheels, and senior recreation centers in your area.

Administration on Aging Resource Directory for Older People
www.aoa.gov/eldfam/How_to_Find/ResourceDirectory/ ResourceDirectory.pdf
800-222-2225
Call this toll-free number and ask the National Institute on Aging to send you their Resource Directory for Older People. This 120-page directory lists organizations that provide services for older people.

Where Can I Find More Information?

We've listed additional resources on the following pages to help you assess and enhance driving safety for the retired driver. Some resources can help you create a transportation plan for your loved one.

National Association of Private Geriatric Care Managers (NAPGCM)
520-881-8008
www.caremanager.org
A geriatric care manager can help older people and their families arrange long-term care, including transportation services. Call the phone number or visit the Web site above to find a geriatric care manager in your loved one's area.

National Association of Social Workers (NASW)
www.socialworkers.org/register/default.asp
A social worker can provide counseling to your loved one, assess his/her social and emotional needs, and assist in locating and coordinating transportation and community services. To find a qualified clinical social worker in your loved one's area, search the *NASW Register of Clinical Social Workers* on the Internet.

Additional clinician, patient, and caregiver resources

Clinician resources

American Occupational Therapy Association (AOTA)
Information on occupational therapists and their role in driving assessment and rehabilitation.
www1.aota.org/olderdriver/

The Association for Driver Rehabilitation Specialists (ADED*)
Information on the Association.
www.aded.net/i4a/pages/index.cfm?pageid=1
Also provides a locating tool for finding a DRS near you.
www.aded.net/custom/directory/?pageid=209&showTitle=1

National Highway Traffic Safety Administration
Many links to resources for older drivers.
www.nhtsa.dot.gov
and
Adapting Motor Vehicles for People with Disabilities
www.nhtsa.dot.gov/cars/rules/adaptive/brochure/brochure.html

American Medical Association (AMA)
Physician's Guide to Assessing and Counseling Older Drivers
www.ama-assn.org/ama/pub/category/10791.html
General older driver information provided by the AMA.
www.ama-assn.org/ama/pub/category/8925.html

CanDrive
Dementia and Driving Toolkit:
The Dementia Network of Ottawa
www.candrive.ca/En/Physician_Resources/toolkit.asp

Canadian Medical Association (CMA)
Determining Medical Fitness to Operate a Motor Vehicle
CMA Driver's Guide, 7th edition
www.cma.ca/index.cfm/ci_id/18223/la_id/1.htm

* The acronym 'ADED' was retained when the association changed its name from the Association of Driver Educators for the Disabled to its current name.

Administration on Aging (AOA)
Information and resources for older drivers.
www.aoa.gov
Summary of Internet resources for the older driver.
www.aoa.gov/prof/notes/Docs/Older_Drivers.doc

Insurance Institute for Highway Safety (IIHS)
A frequently-updated site on older driver laws for driver licensing.
www.iihs.org/laws/olderdrivers.aspx

Older Drivers: Fact Sheets
General information on the older driver from the Centers for Disease Control and Prevention, AARP and the National Highway Traffic Safety Administration.
www.cdc.gov/ncipc/factsheets/older.htm
www.aarp.org/families/driver_safety/
www-nrd.nhtsa.dot.gov/Pubs/809475.PDF

AAA Foundation for Traffic Safety
Older driver brochures.
Safe Driving For Mature Operators (course).
www.seniordrivers.org/driving/driving.cfm?button=publication&selection=MO

Caregiver and patient resources

GrandDriver Program
Resources and information on other older driver sites.
www.granddriver.info/

American Society on Aging
Information on DriveWell, an older driver educational program that may be offered in your community.
www.asaging.org/asav2/drivewell/index.cfm

Road map to driving wellness.
Information on staying fit.
www.asaging.org/CDC/module4/home.cfm

Caregiver and patient resources (continued)

AAA Foundation for Traffic Safety
Older driver brochures and the Safe Driving For Mature Operators course.
www.seniordrivers.org/driving/driving.cfm?button=publication&selection=MO

CarFit and General Information
www.seniordrivers.org/home/toppage.cfm

RoadWise Review
www.roadwisereview.com/

University of Massachusetts Boston Center for Gerontology
Keep moving longer: features for safe driving. A video program that offers advice on staying mobile.
www.geront.umb.edu/inst/projects/promoting.jsp

National Highway Traffic Safety Administration
Older Road Users; other older driver information and materials.
www.nhtsa.dot.gov/people/injury/olddrive
Driving Safely while Aging Gracefully
Reviews the skills and problems that may face older drivers.
www.nhtsa.dot.gov/people/injury/olddrive/Driving Safely Aging Web/index.html

The Hartford
We Need to Talk
At the Crossroads: A Guide to Alzheimer's Disease, Dementia, and Driving
State-of-the-art educational materials for older drivers.
www.thehartford.com/talkwitholderdrivers
www.thehartford.com/alzheimers/brochure.html

New York Department for the Aging
When You Are Concerned—A Handbook for Families, Friends, and Caregivers
A handbook for those worried about the safety of an aging driver.
http://aging.state.ny.us/caring/concerned

AARP Driving Safety Program
The classic course with information on how to locate an educational venue in your community.
www.aarp.org/families/driver_safety/wrapper_driver.py

Australia
Handbooks on older adults from the provinces of Victoria and Tasmania in Australia and the Australian Capital Territory.
www.transport.tas.gov.au/licence_information_folder/the_tasmanian_older_drivers_handbook?SQ_DESIGN_NAME=printer_friendly
www.vicroads.vic.gov.au/NR/rdonlyres/B15A81F1-2047-45B0-821C-7AB3317029B6/0/victorianolderdrivershandbook5.pdf.
www.act.gov.au/living/roads/older/contents.html
www.cota-act.org.au/Download_Documents/PDFS/Older_Drivers_Hbook_web_0703.pdf

Drivers.com
General information on older drivers.
www.drivers.com/Top_Older_Drivers.html

Mobilise
Disabled Drivers Information Website (United Kingdom)
www.mobilise.info/Information.asp

American Occupational Therapy Association (AOTA)
Information on occupational therapists and their role in driving assessment and rehabilitation.
www1.aota.org/olderdriver/

The Association for Driver Rehabilitation Specialists (ADED)
Information on the Association.
www.aded.net
Also provides a locating tool for finding a DRS in your community.
www.aded.net/custom/directory/?pageid=209&showTitle=1

University of Michigan Transportation Institute
Driving Decisions Workbook
A self-awareness guide to identify areas of concern for older driver safety.
http://deepblue.lib.umich.edu/handle/2027.42/1321

Alternative Transportation Options

American Administration on Aging (AOA)
Eldercare locator
Assists in finding older adult resources in your community.
www.eldercare.gov

Community Transportation Association (CTAA)
Information on transportation in the United States.
www.ctaa.org/ntrc/

American Public Transportation Association (APTA)
Locate a local transportation provider in your community.
www.publictransportation.org/systems/

Easter Seals
Transportation solutions for caregivers
www.easterseals.com/site/PageServer?pagename=ntl_trans_care

National Center for Senior Transportation
www.seniortransportation.net/

Local Agency on Aging
Assists in finding resources for the aging in your community.
www.n4a.org/

Seniors on the MOVE
Assists with relocating to another community.
www.seniorsonthemoveinc.com

Alternative Transportation Options (continued)

National Association of Social Workers (NASW)
Locate a social worker near you.
www.socialworkers.org/register/default.asp

United We Ride
Coordination of transportation services.
www.unitedweride.gov

Research and Statistics

Federal Highway Administration
Information on older drivers
http://safety.fhwa.dot.gov/older_driver/older_quiz.htm
Guidelines and recommendations to accommodate older drivers and pedestrians.
Information on environmental design.
www.tfhrc.gov/humanfac/01105/cover.htm

Older Road Users
General information on older drivers.
www.nhtsa.dot.gov/people/injury/olddrive/

Research Agenda for Older Drivers
www.nhtsa.dot.gov/people/injury/olddrive/pub/Chapter3.html

Safe Mobility for Older People: Model Driver Screening and Evaluation Program
www.nhtsa.dot.gov/people/injury/olddrive/safe/

Further Analysis of Drivers Licensed with Medical Conditions in Utah
www.nhtsa.dot.gov/people/injury/olddrive/utah/utah_index.htm

The Road Information Program (TRIP)
A research community on transportation.
www.tripnet.org
www.tripnet.org/OlderDriversStudyOct2000.PDF

Older Driver Involvements in Police Reported Crashes and Fatal Crashes: Trends and Projections
Duke University Science News
http://unisci.com/stories/20022/0624023.htm

Transportation Safety
Center for Injury Prevention Policy and Practice
San Diego State University
www.injuryprevention.org/links/links-trans.htm

AAA Foundation for Traffic Safety
Research on older driver safety
www.seniordrivers.org

Putting it all together.

Fill out the table below with names and numbers of services in your area. Keep this information at your fingertips by placing it next to your phone or posting it on your refrigerator.

Service	Phone number	Cost

APPENDIX C

Continuing Medical Education Questionnaire and Evaluation

APPENDIX C

Physicians Guide to Assessing and Counseling Older Drivers

CME Questionnaire:

Instructions: *The Physician's Guide for Assessing and Counseling Older Drivers* contains the correct answers to the following questions. Circle your answer to each question.

1. Compared to drivers age 25 to 69, older drivers experience—

a. A higher fatality rate in motor vehicle crashes
b. A higher fatality rate per vehicle mile driven
c. A higher crash rate per vehicle mile driven
d. All of the above

2. The majority of older Americans do not rely on driving as their primary form of transportation.

a. True
b. False

3. Compared to younger drivers, older drivers are more likely to wear seatbelts and are less likely to drive at night, speed, tailgate, and consume alcohol prior to driving.

a. True
b. False

4. Medications that have the potential to impair driving ability include—

a. Anticonvulsants
b. Antidepressants
c. Muscle Relaxants
d. a and b only
e. All of the above

5. Aspects of vision that are most important for safe driving include—

a. Visual acuity
b. Visual fields
c. Contrast sensitivity
d. b and c only
e. All of the above

6. Match the cognitive skill to the appropriate driving situation:

___ **Memory**

___ **Visuospatial skills**

___ **Divided attention**

___ **Executive skills**

1. Applying the brake at a green light because a child runs into the path of your vehicle.
2. Listening to the traffic report on the radio while keeping an eye on the road.
3. Recalling that a particular street is a one-way street.
4. Determining the distance from your car to the stop sign.

7. Research has demonstrated that drivers with 20/70 visual acuity have a significantly greater crash risk than drivers with 20/40 visual acuity.

a. True
b. False

8. All of the following are important for viewing the driving environment EXCEPT—

a. Visual acuity
b. Visual fields
c. Memory
d. Neck rotation

9. A Driver Rehabilitation Specialist (DRS) can—

a. Revoke a client's drivers license for poor performance on a clinical exam
b. Evaluate a client's driving skills through an on-road assessment
c. Assess the client's vehicle and recommend adaptive equipment to enhance the client's comfort and driving safety
d. b and c only
e. All of the above

10. Driving cessation has been associated with an increase in depressive symptoms in the elderly.

a. True
b. False

11. Which of the following is NOT recommended as an initial technique to help your patients retire from driving?

a. With the patient's permission, involve family members and caregivers.
b. Explain to the patient why you have recommended that they retire from driving.
c. Provide your patient with information on alternatives to driving.
d. Tell the patient's relatives to hide the car keys.

12. 'Physicians are required to report patients with dementia to their state Department of Motor Vehicles' is an example of—

a. Mandatory Medical Reporting Laws
b. Physician Reporting Laws
c. Physician Liability
d. None of the above

13. Physician-patient privilege can be used to prevent physicians from abiding by their state's Physician Reporting Laws.

a. True
b. False

14. All states protect the identity of the individual who reports an unsafe driver to the DMV.

a. True
b. False

15. Key functions that are important for safe driving include—

a. Vision
b. Cognition
c. Motor function
d. a and b only
e. All of the above

16. What conditions are in part responsible for the increase vulnerability to injury in a motor vehicle crash?

a. osteoporosis
b. atherosclerosis of
c. left-hand turn crashes
d. cars with no air bags
e. All of the above

17. What eye disease when treated has been shown to lower crash risk in older adults?

a. glaucoma
b cataract
c. macular degeneration
d. diabetic retinopathy
e. All of the above

18. What neurological illness in late life carries the highest crash risk for those that continue to drive?

a. Alzheimer's Disease
b. Seizure disorder
c. Stroke
d. Brain Injury

19. Which of the following medications has been shown to be associated with impaired driving?

a. Valium
b. Anti-depressants
c. Narcotics
d. Benadryl
e. All of the above.

20. Which of the following conditions carries the highest crash risk?

a. a driver with a spinal cord affecting his arms and legs that uses a joystick to drive
b. a stroke patient that has to use hand controls on the steering wheel to drive
c. an amputee that uses hand controls on the steering wheel to drive
d. an older adult with restricted neck range of motion

21. What are the most common road conditions when older adults have crashes?

a. wet pavement, morning rush hour, and going up a hill
b. dry pavement, mid-morning, on a flat roadway
c. snowy weather, at night, going around a curve
d. icy conditions, at night, trying to pass another vehicle

22. What vehicle modifications have been shown to reduce crashes or injuries?

a. infrared brakes
b. side air bags
c. enlarged side view mirrors
d. On-STAR
e. All of the Above

23. What is true about laws for reporting unsafe drivers?

a. Physicians prefer to have civil immunity for protection and anonymity when reporting
b. States with mandatory reporting laws appear to have higher number of reports
c. Physicians have been sued for not reporting unsafe drivers and they have been sued for reporting.
d. Almost all states require a physician evaluation for medical fitness-to-drive if a driver is reported to the state authorities as being unsafe
e. All of the above

24. What types of crash scenarios are common for older adults?

a. high speed crashes
b. low speed and/or left hand turn crashes
c. head-on collisions
d. failure to yield
e. Answer B, D

25. What common medical condition is often undiagnosed and likely carries the highest crash rate if left untreated?

a. Sleep apnea
b. Alzheimer's Disease
c. Diabetes Mellitus
d. Parkinson's Disease

Please print and include all information requested.

Name and title _____

Address _____

City _____ State _____ Zip _____

Phone ( ) _____ Fax ( ) _____

E-mail _____

Medical specialty _____

Please mail the completed form to:

Lela Manning, MPH, MBA
Project Coordinator, Older drivers Project
American Medical Association
515 N. State Street
Chicago, IL 60654
(312) 464-4111 (Fax)

Continuing Medical Education Evaluation Form

Please complete this evaluation by circling your response or writing your comments in the spaces provided.

Overall Impression

1. **I feel I can define the safety risks of older drivers as a public health issue.**

   Strongly agree Agree Undecided Disagree Strongly disagree

2. **This guide is a useful and effective physician education tool.**

   Strongly agree Agree Undecided Disagree Strongly disagree

3. **This guide has raised my awareness of driving as a public safety issue.**

   Strongly agree Agree Undecided Disagree Strongly disagree

4. **I have a better understanding of the medical conditions and medications that may impair my patient's ability to drive safely.**

   Strongly agree Agree Undecided Disagree Strongly disagree

5. **I feel comfortable identifying patients who may be at risk for unsafe driving.**

   Strongly agree Agree Undecided Disagree Strongly disagree

6. **I feel comfortable using the various clinical screens to assess patients' level of function for driving fitness.**

   Strongly agree Agree Undecided Disagree Strongly disagree

7. **I feel comfortable using counseling techniques for patients who are no longer fit to drive.**

   Strongly agree Agree Undecided Disagree Strongly disagree

8. **I have a better understanding of driver rehabilitation options and alternatives to driving.**

   Strongly agree Agree Undecided Disagree Strongly disagree

9. **I feel comfortable utilizing referral and treatment options for patients who are no longer fit to drive.**

   Strongly agree Agree Undecided Disagree Strongly disagree

10. **I have a better understanding of my state's reporting laws and legal/ethical issues surrounding patients who may not be safe on the road.**

    Strongly agree Agree Undecided Disagree Strongly disagree

As a result of participating in this educational activity:

❑ I will change my practice How? _____

_____

_____

❑ I will not change my practice _____ Why?

❑ This activity reinforced my current practice_____ ❑ Other (please explain)

_____

_____

_____

I perceived commercial bias in this activity. (*"Commercial bias" is defined as a personal judgment in favor of a specific proprietary business interest of an entity that produces, markets, sells or distributes healthcare goods or services consumed by, or used on, patients.*)

❑ Yes ❑ No If yes, please comment: _____

_____

_____

Please the usefulness of the following guide materials on a scale of 1 to 5.

1. Physicians' Plan for Older Drivers' Safety (PPODS)	*Very useful*	1	2	3	4	5	*Not useful at all*
2. Red Flags for Further Assessment	*Very useful*	1	2	3	4	5	*Not useful at all*
3. Assessment of Driving-Related Skills (ADReS)	*Very useful*	1	2	3	4	5	*Not useful at all*
4. State Licensing and Reporting Laws (Chapter 8)	*Very useful*	1	2	3	4	5	*Not useful at all*
5. Medical Conditions that May Affect Driving (Chapter 9)	*Very useful*	1	2	3	4	5	*Not useful at all*
6. Patient Education Materials (Appendix)	*Very useful*	1	2	3	4	5	*Not useful at all*

Please include any additional comments you feel would be helpful.

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Only physician participants (MD, DO, or equivalent international medical degree) are eligible to receive *AMA PRA Category 1 Credit™*. Physicians will receive a certificate of credit, indicating one credit for each hour of participation, rounded to the nearest quarter credit (or hour). Physicians must complete this form to receive *AMA PRA Category 1 Credit*.

Non-physician participants may complete this form to obtain a certificate of participation indicating that this activity was approved for *AMA PRA Category 1 Credit*.

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Specialty:_____

Please Send Completed Questionnaires and Evaluation Forms to:

Lela Manning, MPH, MBA
Project Coordinator
Older Drivers Project
American Medical Association
515 N. State Street
Chicago, IL 60654
(312) 464-4111 (Fax)

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